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Tactics applied to schemes

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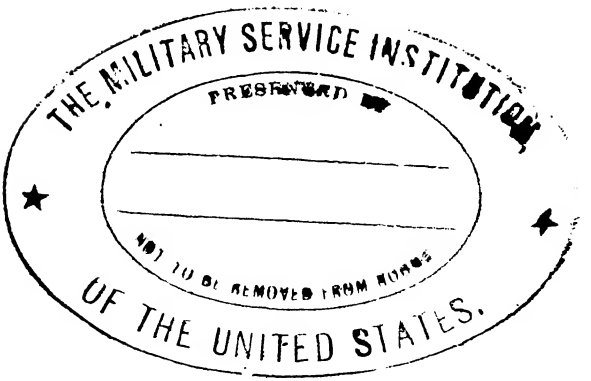
APPLIED TO SCHEMES



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TACTICS APPLIED TO SCHEMES

WITH NUMEROUS SOLUTIONS TO
TACTICAL SCHEMES AND 16 MAPS

BY MAJOR J. SHERSTON, D.S.O. p.s.c.
THE RIFLE BRIGADE, LATE D.A.A.G. FOR INSTRUCTION
AND MAJOR L. J. SHADWELL, p.s.c.
LANCASHIRE FUSILIERS, LATE D.A.A.G. FOR INSTRUCTION

IN TWO VOLUMES

VOL. I. TEXT

FOURTH EDITION, REVISED AND ENLARGED
BY MAJOR SHADWELL

LONGMANS, GREEN, AND CO.
39 PATERNOSTER ROW, LONDON
NEW YORK AND BOMBAY
1905

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PREFACE TO SECOND EDITION.

HAVING had frequent applications from officers for a Second Edition of this book, I asked Captain Shadwell, D.A.A.G. for Instruction, to assist me in its revision; and this he has not only done, but has, at the same time, added some Solutions to Schemes set at Examinations in India during the past few years. I am very much indebted to him, and trust that the solutions may be of use to those who study them.

At the same time I would venture to impress on officers that there is more than *one* solution to a tactical problem. As a general rule, officers who show practical common sense in their replies cannot fail to be successful, provided they follow the general principles laid down in the Drill Books, 1896; which principles I have tried to bring before them in this book.

J. SHERSTON, *Major*,
Rifle Brigade.

SIMLA, *February* 1, 1897.

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PREFACE TO FOURTH EDITION

THE third edition of this book has had a quicker sale than either of the preceding editions, and I trust that the fourth edition will be of use to officers preparing for Examination in not only Tactics, but also in Military Engineering and Topography. As regards the first portion of the book, viz., Chapters I. to X., which deal with Tactics in the abstract and the issue of orders, &c., this edition follows the lines of the previous editions. No attempt has been made to introduce any original or personal views, but the principles enunciated in "Combined Training" and in the tactical portions of the latest editions of "Cavalry, Field Artillery and Infantry Training" have been collated and in some cases expressed in slightly different language in the hopes of impressing them more thoroughly than might be the case if a student had access only to the books in question.

These chapters are therefore intended to be read *in conjunction with*, and *not in substitution of*, "Combined Training" and "Cavalry, Field Artillery and Infantry Training." Chapter IV., on the issue of orders, will, it is hoped, be of assistance to officers who have had no previous experience in the writing of orders.

Chapter XI. is an innovation. The examination in *d* (i.) now consists of Military Engineering, Tactics and Topography, and the first two of these subjects are so intimately connected that I have thought it advisable to include a chapter devoted exclusively to what I may call "Applied Fortification."

The idea has been, in the chapter under reference, to show candidates for promotion to captain and major exactly the sort

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of Military Engineering problems which occur in connection with Tactics. Scheme No. X., Solution No. X., contains the examination paper in *d* (i.) set to captains for promotion to major in May 1904, and Scheme No. XI., Solution No. XI., that for November 1904; and in these papers there are several questions in Military Engineering based on, and closely bound up with, tactical problems. It is questions of this sort which Chapter XI. is especially intended to elucidate.

The third edition contained seven worked out solutions and nine maps; the present edition contains eleven worked out solutions and sixteen maps. Of these solutions, the three last are to schemes which have been very recently set. In all cases the reader is provided with a map without any troops on it in order that he may work out a solution for himself independently of the solution given in this book, and in most cases an additional map with the troops shown on it is given to elucidate my solution of the scheme.

To derive full advantage from the solutions which I give, the reader is earnestly enjoined to work the problems out for himself and plan the troops on the spare map before he proceeds to read the solution given by me or to look at the worked out map.

He should further remember, as stated by the late Colonel Sherston in his preface to the second edition, that there is *more than one solution* to a tactical problem, and the student's solution may be quite as good, or better, than the one I have propounded.

This book is not only intended for candidates for promotion to captain and major, but also for officers preparing for examination in tactical fitness—*i.e.* promotion to lieutenant-colonel or appointment as second in command.

It has not been possible to give examples of questions and copies of maps set in the examinations for the above rank or appointment, because the examinations differ so widely. Many of the maps given, however, are copies of maps on which problems have been set; and there are many isolated problems in this

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book, notably in Chapter XII., without solutions, and in schemes with solutions, Nos. IV. to XI., identically similar to those which have been set in the examinations in "Tactical Fitness."

Finally, now that garrison classes have been abolished and the onus of preparing officers for promotion is thrown on commanding officers, it is hoped that this book, containing, as it does, so many maps, and problems based on them, will go largely to solve the difficulty, which has always hitherto existed, of obtaining old examination papers and the corresponding maps.

I need hardly say that the lamented death of Colonel Sherston in the South African War has been a great loss to me in preparing both this and the third edition; but where tactical problems admitted of many solutions, and especially where the best method of utilising cavalry and artillery and engineers was involved, I have taken the advice of officers belonging to those branches with great advantage to myself.

I may finally add, that having been for seven years a D.A.A.G. for Instruction, and having worked with some two hundred and fifty officers during that period, I have been able to find out not only what are the points on which officers as a rule require assistance, but the easiest method of solving the numerous difficulties which an officer, without previous experience in passing examinations, has to confront; and the tactical problems selected for this book have been chosen because they cover, in one form or another, nearly every situation which can present itself in a written tactical scheme.

L. J. SHADWELL, *Major*,
Lancashire Fusiliers,
late D.A.A.G. for Instruction.

MIDDELBURG, CAPE COLONY,
September 1904.

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ERRATA AND ADDENDA

Page 13, line 23, *for* "section 70" *read* "section 19."
,, 14 ,, 9 *delete from* "It will be noted" *to* "point in a minute."
,, 20 ,, 2 *for* "sec. 45" *read* "secs. 3 and 7."
,, 20 ,, 3 *for* "1902" *read* "1905."
,, 20 ,, 9 *for* "the nature of the operation" *read* "the name of the officer issuing the order."
,, 21 ,, 5 *delete* "*Combined Training*" *to* "seldom justified," and *substitute* "*Combined Training*, 1905, sec. 3, para. 10, says, 'Orders must be precise, especially as regards time and place. They will contain nothing of a conditional nature, such as 'if possible,' 'if practicable,' 'should,' or 'may'."
,, 25 ,, 7 *delete from* "*Combined Training*" *to* "single document."
,, 30 ,, 29 *for* "*Combined Training*, 1902, sec. 87" *read* "*Combined Training*, 1905, sec. 58."
,, 51 ,, 1 *for* "would cover" *read* "might perhaps cover."
,, 51 ,, 4 *for* "would" *read* "might perhaps."
,, 58 ,, 10 *for* "section 24" *read* "section 125."

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TACTICS APPLIED TO SCHEMES

CHAPTER I

MAP-READING IN CONNECTION WITH SCHEMES AND ANSWERING THE QUESTIONS BASED ON MAP

BEFORE a candidate begins to work out tactical and military engineering problems on maps he must learn to read a map quickly and correctly. Till he can do so, he will do well to continue his study of topography, for many an officer with a fair knowledge of tactics has found himself greatly handicapped by not being able to realise what the ground which is depicted on the map represents.

Having therefore learned to read a map, when the map is given on which the tactical problems are based, the following details should receive the earliest attention :—

1. *The Scale of the Map.*—Maps in connection with tactical problems are generally on a 1-inch, 4-inch, or 6-inch to a mile scale. If, however, as is nearly always the case with foreign maps, the representative fraction of the scale merely is given and a foreign scale, then it is well to remember that $\frac{1}{63360}$ is the representative fraction of a scale of one mile to an inch. If then, for instance, the scale of the map given is $\frac{1}{25000}$, then $\frac{63360}{25000} = 2\frac{1}{2}$ inches to one mile nearly, and this probably gives one a better idea of various distances than the foreign scale will do.

2. *The North Point* is next in importance. In nearly all maps true north is at the top of the map, and sometimes the magnetic variation is also given on military maps.

3. *The Contours.*—Next note the vertical interval apart of the contours, or if the hills are not shown by contours at regular intervals, note the heights of the hills above the valleys, for if

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there are no numbered contours, there are sure to be numbers indicating the heights of various hills. In examinations in *d* (i.) at home and colonial stations, it is apparently the tendency to give with the paper a 6-inch ordnance map of some district in Great Britain. These maps have 100-foot contours shown by a faint dotted line. It greatly assists one in reading the map to run a red pencil along these faint contours, and if the light in the room is not good, or if there is much detail on the map, a magnifying glass is of much help in tracing the contour lines.

4. *The Valleys and Watercourses* should next be noted, and if a blue pencil is run along all streams not coloured blue on the map, it largely assists one to grasp the general conformation of the ground.

5. *Roads, Bridges, and Fords* should next be noted. If roads are faintly drawn and difficult to distinguish from streams or hedgerows, they may advantageously be coloured brown if there are red contours, or red if the contours are in brown.

6. *The Question Paper* should be studied in conjunction with the map, and if the map, as in the case of a large English 6-inch ordnance map, is an extensive one, it will be a waste of time to colour roads, streams, and contours which do not come into the sphere of operations. While studying the question paper the student will do well to at once find all places on the map which are referred to in the paper, and if any of the places are hard to find, and he may have difficulty later on in locating any of them, he should underline them on the map in coloured pencil so that they will at once catch the eye.

Doing as I suggest, if the candidate has, as he should of course have, coloured pencils, ready sharpened, all this colouring will take only a very few minutes, and will more than repay him by the time he will save subsequently.

With the map laid out before him, and with all the features clearly indicated as explained above, he should read the whole paper carefully through. As a rule, three, or three and a half hours are allowed in which to answer the questions, and very frequently the questions are consecutive and all based on the one general idea. If this is so, before putting pen to paper, it is well to make up one's mind *generally* as to how to answer each question. If the paper is a series of problems, one based on the other, as in Schemes with Solutions Nos. I. to V., for example, by reading carefully all the questions, and more especially the data for questions which come later on in the paper, the candidate will probably get some clue or hint as to how to answer some ques-

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tions. It may happen, for instance, that he is in doubt as to which place he will send the artillery in answering Question I., but on reading the data for Question IV. he may see that the examiner says that the artillery which is on such and such a hill is enfilading a certain bridge, and that the enemy, in consequence, are attempting a crossing elsewhere. On consulting the map the candidate may find that this particular hill offers a better artillery position than some hill on which he had previously settled. If so, he will do well to adopt the suggestions which the examiner has very likely unconsciously or unavoidably given, for it is very hard to set a series of questions based on one general idea, without in the data to another later question, or in the question itself, giving some clue as to the course which, in the examiner's mind, some operation is likely to take. An excellent example of how, by carefully studying the whole paper, one may get assistance in answering questions is in Scheme with Solution No. III., Chapter XIII. Officers who do not carefully study *all* the questions in this scheme have in my experience frequently marched the brigade to Ashton on the same day as the remainder of the force moves to Bagshot Heath. If, however, Question IV. is read, it will be seen that the brigade should have marched to Horton *the previous day*, a much better strategical arrangement, for after a time this brigade must also march to Bagshot Heath, as Question V. clearly indicates. In this paper, therefore, Questions IV. and V. help the candidate to answer Question I., and Question V. is of assistance in answering Question IV.; because if the brigade at Ashton moves on Esher through Stoke, it protects the right flank of the remainder of the force, and helps the candidate in choosing the routes for the force left at Horton.

In the examination in *d* (i.) three hours is allowed for answering the whole paper. Of this time the candidate may well employ half-an-hour in studying the map, colouring the contours, rivers, and roads as suggested above, and in making up his mind *generally* how he will answer each question. This will leave two and a half hours in which to write his answers, and before doing this he should decide how much time he can devote to each question, and then work with his watch in front of him.

Taking Scheme with Solution No. X., Chapter XIII., as an example, it will be seen that the total number of marks for each paper is five hundred, and that there are three questions in each paper, two of which are worth each one hundred and twenty-five, and the other two hundred and fifty. In both papers the question worth two hundred and fifty will take longer to answer than the

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other two questions combined. I should therefore be inclined to assign one hour and twenty minutes for the long question, worth two hundred and fifty marks, and half-an-hour for each of the other questions; and, assuming the examination begins at 10 A.M., that at 10.30 the candidate is ready to begin writing the answers, he will do well to mark on his question paper the time at which he should begin each question, or, better still, finish it. Ten minutes should always be left in which to read over what has been written, and make any small additions or alterations, and I have allowed for this in calculating the time allotted to the questions. Taking, therefore, the first paper in Scheme with Solution No. X., Chapter XIII., as an example, it would be well to mark on the question paper, in large figures, 11 A.M at the end of Question (1), 12.20 P.M. at the end of Question (2), and 12.50 P.M. at the end of Question (3), and then to work with one's watch on the table.

In answering examination papers many officers, especially if they have not practised answering similar papers strictly in the time allotted, devote far too much time to the first question, and then find they have not nearly time enough to answer the remaining questions. The French proverb, "*Le mieux est l'ennemi du bien*," should always be borne in mind in this connection. Applied to examination papers it may be taken to mean that if a candidate goes into very great detail in answering the first question, spending more than half of the whole time allotted for all the paper, he must necessarily fail to answer the remaining questions as well as he might otherwise do. If, for example, there are five questions, each worth one hundred, and he spends one and a half hours on the first question, giving such an absolutely complete answer that he assures himself full marks for that question, he must necessarily fail to give even fairly complete answers to the remaining questions, and may well fail to secure even half marks on the whole paper. It moreover frequently happens that a candidate who devotes a very long time to the first question by no means gives an absolutely complete answer, but writes much that is wrong and much that is gratuitous, and finds towards the end of the paper that there are two questions which he could answer absolutely and perfectly, having all the information at his fingers' ends, but that he has left himself little or no time, and he consequently fails to profit by his good fortune.

Take for example Scheme with Solution No. VIII. In this paper there are at the end, for every candidate, two questions in abstract tactics. The candidate may be a rather poor per-

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former in answering questions on applied tactics, but knows his *Combined Training* and the Indian manual on "Bush Fighting" most perfectly. The two last questions are therefore for him what are familiarly known as "sitters," and are worth about one-third of the full number of marks. I think in such cases a candidate will do well, unless he is prepared to apportion his time and work most strictly by his watch, to *at once* answer the questions about which he is absolutely sure, devoting the *remainder* of the time to questions about which he does not feel so sure. I would not advise his writing the answers to the last questions on the first page of his examination book, for it is annoying for an examiner not to have the questions answered in order, and an examiner should always be propitiated. It is, however, quite easy for a candidate to leave a sufficient number of pages in which to answer the first, second, and third questions, later on, *in point of time*, making a very liberal allowance of space, and then towards the end of his book to answer *at once* the fourth and fifth questions. Having done this, and with the comforting assurance that he has practically secured one-third of full marks to start with, the candidate, no longer flurried, can turn back to the earlier questions. It may happen that he does not fill up all the space he has allotted, and there are two or three blank pages left before the questions he has previously answered are reached. In this case all he has to do is to write on the blank pages "For answers to Questions IV. and V. please see on." This obviates the possibility of the examiner thinking when he has read the answers to Questions I. to III. that he has come to the end of the candidate's paper. On the contrary an agreeable surprise may await the examiner, for he may find the answers to Questions IV. and V. a pleasing contrast to their predecessors.

In many papers, notably in Scheme with Solution No. VIII., the questions are not based on the same general idea, but are quite independent the one of the other. This is nearly always so in "Tactical Fitness" examinations. In such a case there is no great necessity to attentively study the whole paper before beginning to answer a single question, but even so it is well worth while to read the whole paper through and to answer first, if he gets the opportunity, questions, the answers to which the candidate has at his fingers' ends.

It is most important in answering tactical questions, even if the examiner does not especially ask for "reasons and considerations," to give them, if only in brief. The candidate's solution

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of a tactical problem may differ widely from any solution which the examiner may have in his mind's eye, and at first sight the candidate's ideas may appear unsound. He may, however, have excellent reasons, based perhaps on some assumption (which should also be stated and drawn attention to in red ink) which gives quite a different aspect to his solution. In examinations in India the examiner has hitherto always particularly enjoined candidates to give "reasons and considerations." It is well to do so, even if they are not specifically asked for.

Finally, one should economise one's writing by giving the fullest possible information when putting troops on the map. This especially applies to questions in outposts. If the picquets, supports, and reserves are clearly marked on the map, *e.g.* P. ½, No. I.; S. 1, No. II.; R. 3, No. I., the examiner can take in all your dispositions in a moment, and sees that No. I. picquet is half a company strong, No. II. support one company, and No. I. reserve three companies strong. It is quite superfluous to write a page or more describing how one has half a company on picquet at such and such a bridge, and half a company in support behind such and such a house. The examiner by looking at the candidate's map should be able to see all this at a glance. One need not say where one has left out cavalry standing patrols, nor in what directions infantry patrols are sent; this can all be indicated on the map. It is, however, of great importance to tell the examiner why one has made a certain picquet, for instance, very strong, and another comparatively weak. A candidate should write clearly, and not use colloquial expressions nor unusual abbreviations. It is well to remember that the examiner will probably have from fifty to a hundred or more of candidates' papers to look over, and as even examiners are human, the fact that one's answers, though perhaps not particularly brilliant, are easy to read, are written in good English, and are answered in the proper sequence, will very possibly prepossess him in one's favour without his being conscious of the fact. Candidates are very apt to imagine that it is impossible to answer the whole paper properly in the time allotted. It *is* impossible if the candidate cannot read a map quickly, is a slow writer, and more particularly a slow thinker. All the schemes, however, given with solutions in this book in Chapter XIII. have been answered, and quite fully, by candidates under examination conditions, and who had been constantly practised in writing the answers to similar schemes, and in the same time as in an examination. No amount of looking into tactical problems, without *writing* the answers in the

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time allotted, will enable a candidate, when the examination comes off, to finish the whole paper, and give concise but complete answers. It should be remembered that the papers are purposely set of such a length that only a practised and reasonably quick *thinking* candidate can finish them, for, in most cases, the man who is slow at solving a tactical problem on the map, where he can see much more ground than if he were actually on the spot, will be slow in the field. It is therefore, as I have said before, of supreme importance to practise writing orders, and answers to questions, *against time*, and it is to enable candidates to do this that the spare maps have been given, and so many questions and examination papers without solutions.

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CHAPTER II

COMPOSITION OF AN ARMY CORPS, ETC.

ALTHOUGH in nearly all the Tactical Schemes set for examination purposes, either at promotion examinations or at the examinations for tactical fitness of field officers, no larger force than a brigade is, as a rule, mentioned, it is, nevertheless, important for officers to realise how an army in European warfare is composed, so that if, for instance, they are dealing with a brigade as an advanced guard, they may have some idea of what the main body coming up behind is likely to consist.

The composition, therefore, of an army corps, a division, and a brigade, also of a cavalry division and a cavalry brigade, as laid down in the English *Field Army Establishments*, "Service Abroad," are given below, and these more or less resemble in their composition those of Continental armies.

In India there is no establishment by army corps, the division is the highest unit; and the composition of a division and a brigade of infantry, and of a brigade of cavalry, as laid down in the Indian *Field Service Manual*, is also given.

Both the English and Indian establishments are liable to minor alterations from time to time.

ENGLISH ESTABLISHMENT

Infantry Brigade

4 Battalions.
1 Supply Column.
1 Bearer Company and 1 Field Hospital.

Infantry Division

2 Infantry Brigades (as above).
1 Squadron Cavalry (Divisional Cavalry).
6 Batteries Field Artillery (2 Brigades), with 2 Ammunition Columns.
1 Field Company R.E.
1 Supply Column.
1 Field Hospital.

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Army Corps

3 Infantry Divisions (as above), and in addition the following corps troops.

Corps Troops

1 Cavalry Regiment.
Headquarters one Cavalry Regiment.[1]
2 Batteries Horse Artillery, with one Ammunition Column.
3 Batteries Field Artillery (howitzers), and one Ammunition Column.
3 Batteries Heavy Artillery, 4.7 inch guns, one Ammunition Column.
} Corps Artillery

1 Ammunition Park.
1 Pontoon Troop.
1 Telegraph Division.
1 Balloon Section.
1 Field Company.
1 Field Park.
1 Railway Company.
} Corps Engineers.

1 Battalion Infantry.
1 Supply Column.
1 Supply Park.
1 Field Bakery.
1 Field Hospital.

Cavalry Brigade

3 Regiments Cavalry (3 Squadrons each)
1 Battery R.H.A.
1 Supply Column.
1 Ammunition Column.
4 Companies Mounted Infantry.
1 Field Troop R.E. (103 men).
1 Bearer Company.
1 Field Hospital.

[1] Of the 3 Squadrons of this Regiment, one is with each division.

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INDIAN ESTABLISHMENT

Infantry Brigade

2 Battalions British Infantry.
2 Battalions Native Infantry.
2 Field Hospitals (1 British, 1 Native).

Cavalry Brigade

1 Regiment British Cavalry.
2 Regiments Native Cavalry.
1 Battery R.H.A.
¼ Field Hospital (British).
½ Field Hospital (Native).
Veterinary Field Hospital.

DIVISION OF ALL ARMS

3 Brigades Infantry (as above).
1 Brigade Cavalry (as above) and the following divisional troops.

Divisional Troops

1 Regiment Native Cavalry.
1 Battalion Native Infantry.
1 Battalion Pioneers.
2 Field Batteries.
1 Heavy Battery.
2 British Mountain Batteries.
1 Native Mountain Battery.
1 Ammunition Column.
3 Companies Sappers and Miners.
1 Printing Section.
1 Photo-Litho Section.
1 Engineer Field Park.
½ British Field Hospital.
1½ Native Field Hospital.
1 Veterinary Field Hospital.

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CHAPTER III

SPACE AND TIME REQUIRED FOR FORMATIONS

SPACE

Infantry

DEPTH of column of fours = frontage in line, but when a battalion is on the march, allow 1 yard, not 1 pace, for every file, and 100 yards in addition for distances between companies, and for first line transport, *i.e.* for 1 forage cart for tools, 2 S.A.A. carts, 1 medical store cart, 2 ammunition mules, 2 machine guns. A battalion, therefore, 800 strong occupies about 500 yards on the march. Distances between companies are 6 yards, between battalions 10 yards, between brigades 30 yards.

Cavalry and Mounted Infantry

A squadron usually consists of four troops; a troop is subdivided into three or four sections, usually six to eight men.

Cavalry in Columns of Sections, i.e. *Four Abreast.*—Allow 1 yard per horse in the ranks, and for a regiment, or for 2 companies mounted infantry in fours, an additional 100 yards for distances (10 yards) between squadrons or companies; and for first line transport — *i.e.* in the cavalry — 1 machine gun and carriage, 1 pompom, 2 S.A.A. waggons, 1 medical store cart, 3 pack-horses for pioneers' equipment.

Therefore one regiment (400 men) takes up a depth of 500 yards in sections; and if the regiment is in file, allow 2 yards per horse and an additional 100 yards, so that the length in file will be 800 + 100 yards = 900 yards.

Intervals on the march are 10 yards between squadrons or companies of mounted infantry, 20 yards between regiments, 30 yards between brigades.

Artillery

In Line.—For practical purposes the frontage at full interval of a battery of horse or field artillery may be taken to be 100

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yards. The full interval between batteries in action is 25 yards, close interval 10 yards.

In Column of Route.—One battery R.F.A. takes up a depth of about 300 yards with 9 wagons, 1 battery R.H.A. with 9 wagons takes up a depth of 300 yards with detachments left, 360 yards with detachments front or rear.

A Mountain battery occupies about 350 yards in column of route, without baggage, *i.e.* 1st and 2nd lines only.

Distances between batteries in column of route = 10 yards.

Distances between artillery brigades = 20 yards.

TIME

Pace of the Three Arms

Infantry.—Three miles an hour, including short halts, for an infantry division, in ordinary country on fair roads; or 1 mile in 18 minutes, or 100 yards a minute not allowing for halts. If roads are bad, or the force very large, the pace will be proportionately less.

Mounted Troops.—Four miles an hour at a walk; 5 miles an hour trot and walk, including short halts; 1 mile in $7\frac{1}{2}$ minutes at a trot, or 8 miles an hour; 440 yards a minute at a gallop, or 12 to 15 miles an hour.

In moving to a starting-point, all troops may be taken to move at 100 yards a minute.

Military Wagons.—Three miles an hour, allowing for a halt of five minutes each hour.

When the three arms move in combination, the pace of the slowest (infantry) will be calculated for all arms.

Ten to twenty per cent. must be allowed for straggling with a large force, but *Combined Training* makes no mention of this.

There are three problems connected with time and space.

Problem 1. To calculate the length of a column, the strength of the force being given.

Problem 2. Having been given or having calculated the length of a column, to ascertain the time it will take in passing a given point or in completing a given march.

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Problem 3. Having been given the time in passing a certain point, to calculate the strength of a column.

To calculate Problem 1. This can always be calculated from the data previously given, viz. :—

Infantry.—500 yards = 1 battalion 800 strong with first line transport; but with a large force allowance must always be made for straggling.

Cavalry.—In sections, 1 file = 2 yards, or 100 men 100 yards. In files, 1 file = 4 yards, or 100 men 200 yards.

Artillery.—Divide yards by 20 = number of guns and wagons approximately. Multiply number of guns and wagons by 20 = number of yards approximately; but remember there are ordinarily with our batteries 6 guns and 9 wagons, *i.e.* 15 carriages; and 15 × 20 = 300 yards, which is the length of a horse or field battery on the march, if, in the former, the "detachments are left."

To calculate Problem 2. Divide the length of the column in yards by 88. This gives the answer in minutes, provided the column is marching at 3 miles an hour; but if the column is marching faster, then divide by 100.

N.B.—When calculating how long a given march will take, do not omit to include the length of the column as well as the length of the march. *Combined Training* in a note to section 70, says that for determining space and time the regulation distances between units need not be considered, as they are allowed for in the spaces calculated for each unit, *i.e.* in the 300 yards for a field artillery battery, &c. *Combined Training* makes no mention of any allowance for straggling, but infantry especially, despite all orders to the contrary, open out and straggle considerably on the march, and I have taken this into account in the calculations.

To calculate Problem 3. Multiply the given time by the numbers in the "Rough Calculations" below; this will give you the strength of the column. If composed of the three arms, calculate each separately.

N.B.—*Infantry* are usually in fours.
Cavalry in sections.
Mounted infantry in fours.
Artillery in column of route.

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For Rough Calculations.

At three miles an hour—

About 200 infantry in fours . . . }
„ 120 cavalry in sections at a walk . }
„ 100 cavalry if behind infantry . . } will pass a given point in one minute
„ 5 vehicles, *i.e.* 2 guns and 3 wagons or 3 guns and 2 wagons in column of route, or about $\frac{5}{15}$ths of a battery }

This is only approximate, but quite sufficient for all practical purposes.

It will be noted that *Combined Training* says 5 guns or ammunition wagons, if in rear of infantry, will pass a given point in a minute. I think *Combined Training* evidently means 5 vehicles or $\frac{5}{15}$ths of a battery will pass a given point in a minute.

Field Artillery Training, 1902, in section 4, says, "On the march each ammunition wagon will accompany its gun." As the length of a field battery with 6 guns and 9 wagons is 300 yards, it is quite clear that, marching at the rate of 100 yards a minute, it will take three minutes for the whole battery to pass a given point. The number of guns and wagons (with 9 wagons) in a battery is 15, so that in a minute 5 of these vehicles will pass a given point, *i.e.* 3 guns *and* 2 wagons, or 2 guns *and* 3 wagons, but not "5 guns *or* wagons," because the guns must be accompanied by their wagons.

Examples.

Question 1. What length will the following column occupy in column of route?

2 brigades infantry (4 battalions, each 800 strong).
1 regiment cavalry, 400 strong, in sections.
2 batteries field artillery.

Usual distances. Roads good.

Infantry.—8 battalions at 800 men each = 8 × 500 = 4000 yards
Cavalry.—1 regiment—400 men in sections = 500 „
Artillery.—2 batteries = 2 × 300 = 600 „

Length of column = 5100 „

The road being assumed to be good, I allow only 10 per cent. for straggling. Add 10 per cent. = 510 „

Length of road occupied = 5610 yards, or about $3\frac{1}{4}$ miles.

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Question 2*a*. How long will each arm of the force mentioned in Question 1 take passing a given point, and how long will they be doing a march of 11 miles without long halts?

1 brigade of infantry	= 4000 yards		
	at 100 yards a minute	=	40 minutes
1 regiment of cavalry	= 500 yards		
	at 100 yards a minute	=	5 ,,
2 batteries field artillery	= 600 yards		
	at 100 yards a minute	=	6 ,,
			51 ,,

And allowing for straggling at 10 per cent., say 56 minutes.

At 3 miles an hour, including short halts, 11 miles will take $\frac{11}{3}$ = 3 hours 40 minutes, and adding 56 minutes for length of column, total time will be 4 hours 36 minutes.

Question 2*b*. A force consisting of 3 regiments cavalry (each 400) in sections, and 2 batteries R.H.A., are proceeding in column of route, how long will they take doing a march of 22 miles on a good road?

Cavalry.—3 regiments	= 500 × 3	=	1500 yards
Horse Artillery.—2 batteries	= 360 × 2 [1]	=	720 ,,
	Length of column	=	2220 ,, or 1¼ m.

Cavalry and artillery will trot and walk 1 mile, including short halts, in 12 minutes.

Therefore they will do 22 miles in	22 × 12	= 264 minutes.
Add 15 minutes for length of column		= 15 ,,
45 minutes for a long halt		= 45 ,,
		= 324 ,,
		= 5 hours 24 min.

Question 3. A column is observed passing a certain point in column of route.

Infantry took 4½ minutes.
Cavalry ,, 5 ,, (in sections).
Artillery ,, 9 ,,
Give the approximate strength of the column.

---

[1] It is assumed that the batteries are marching with detachments front or rear, and occupy therefore 360 yards.

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Infantry.—200 men infantry pass a given point in 1 minute. $4\frac{1}{2} \times 200 = 900$; deduct 100 for baggage = 800 men or one battalion with no deduction for straggling, or 720 men deducting 10 per cent for straggling.

Cavalry.—100 cavalry in sections behind infantry pass a given point in a minute, $5 \times 100 = 500$; deduct $\frac{1}{5}$th for baggage = 400 men.

Artillery.—5 guns or wagons—*i.e.* $\frac{5}{15}$ths of a battery—pass a point in a minute, $5 \times \frac{9}{15} = \frac{45}{15} = 3$ batteries.

Question 4. A column consisting of 1 brigade of 4 battalions, each 800 strong; 2 squadrons cavalry (in sections); 1 field artillery battery, is ordered to march from A to B, $9\frac{1}{2}$ miles, the head must reach B at 9 A.M. What time must it start? Road good. And what time must a column of 2 battalions (each 800 strong), 1 squadron cavalry, and 1 battery artillery start from C, so as to join the rear of the 1st column at a point D, 5 miles from A and $3\frac{1}{2}$ miles from C.

As the road is good, pace may be 3 miles an hour, including short halts.

Therefore $\frac{9\frac{1}{2}}{3} = \left(\frac{19}{2} \times \frac{1}{3}\right) = \frac{19}{6} = 3$ hours 10 minutes.

To reach B at 9 A.M., it must therefore start at 5.50 A.M., or if one halt of 10 minutes is made when clear of D, it should start at 5.40 A.M.

5 miles + length of column = time at which rear of first column will pass D.

	Length of column in yards.
Infantry.—4 battalions = 500 × 4 =	2000
Cavalry.— 2 squadrons at 100 men each =	250[1]
1 field artillery battery =	300
	2550
Add 10 per cent. of length of column, including distances, for straggling =	255
	2805

[1] As a regiment of cavalry has first-line transport covering 100 yards, I am assuming that the transport of 2 squadrons will cover 50 yards.

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Therefore distance first column has to go to be clear of D = 2805 yds. + 5 miles = nearly $6\frac{3}{4}$ miles.

Therefore at 3 miles an hour, including short halts, the column will take 2 hours 15 minutes to be clear of D. It starts at 5.50 A.M. Therefore it will be clear of D at 8.5 A.M., or if it starts at 5.40 it may be clear at 7.55 A.M.

The second column has $3\frac{1}{2}$ miles to march to reach D, at 3 miles an hour; this will take 1 hour 10 minutes. It must therefore start at 6.45 A.M., but as in marching 8 miles, a longer halt than those included in the rate of 3 miles an hour may be advisable, it might well start at 6.35 A.M., and halt with its head at D. If the other column is in advance of the time calculated, the second column can abridge its halt, or if the other column is behind time, the halt must be extended.

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CHAPTER IV

MARCHES AND ORDERS

Points to be Observed in connection with Marches

1. Always march by the shortest routes, in as many columns, and on as broad a front as possible. The roads to be followed should have been previously reconnoitred.

2. When in the neighbourhood of the enemy, the intervals between columns should not be so great as to prevent them affording each other mutual support, but at the same time columns should march on as broad a front as is compatible with safety. A broad front makes supply and quartering easier, and tends to deceive an enemy.

3. Columns marching by separate roads should have their marches so timed as to ensure their arrival at a particular point as nearly as possible together.

4. *In the proximity of the enemy.*—When marching by several roads, tactical units should march complete, each with their own advanced guard, and should be easily convertible into order of battle. Hence artillery should be forward in the column, but always with some infantry in front of it, and such portion of cavalry as is not required at first should march in rear. Pace of the infantry regulates the pace of the whole. Second line transport and supply columns should not in this case march with their units.

5. *When not in the proximity of the enemy.*—Different roads can be told off to the different arms; the shortest road being given to the infantry, the best and most level to the artillery, the softest and broadest, even if a little roundabout, to the cavalry. Units may be accompanied by their own transport.

6. The longer the column, the longer in proportion will be the time occupied by the march.

Orders for a March

1. Orders should be brief, clear, and precise, especially as regards time and place; the more this is attended to the less are

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they liable to misrepresentation. They should always be drawn up on the same principle as regards arrangement of paragraphs. All details should be omitted which may reasonably be supposed to be known to the commanders, and the execution of which might, and should, vary with a change of circumstances.

2. Orders emanating from the different grades vary in their scope. The higher the commander the more general, without being less definite, are the orders proceeding from him. The admission of details increases as we proceed downwards in the scale of commanders. It is necessary to bear this in mind, as the tendency is to go into too much detail, thereby infringing on the responsibilities of subordinate commanders. *Verbal orders may lead to serious mistakes.*

3. Orders received from a higher commander should not, as a rule, be repeated word for word in the orders of the inferior commander, nor enlarged upon, but extracts should be made of what is necessary for the information of the commanders next lower in the scale, or, if sufficient copies of the orders of the higher commander are available for issue, attention may be called to certain portions of them, and these portions dealt with in greater detail, *e.g.* "Attention is invited to paragraph 4 of Divisional Order No. 2 of this date, and with reference thereto the O.C. No. 1 Battalion is directed to . . ."

4. When some marches away from the enemy, orders would show for the next few days the daily destination of the units. But when the enemy is close, these movements must be regulated day by day. In the latter case, *if no engagement is expected for the day*, the destination, the point to be reached by the advanced guard, &c., and the directions for reconnoitring should be broadly indicated. *If a collision is expected*, the order must contain instructions whether the march is to be carried out at all hazards, or left optional to commanders, or whether a serious engagement is to be avoided. Sometimes, when the situation is not clear and further intelligence is expected, it is desirable to order the movement to be carried out as far as a certain line, and there await further orders, and an hour may be prescribed at which, in the absence of further orders, the march is to be continued.

5. As regards reconnaissance and patrolling, the desired directions should be indicated.

The following rules for framing orders in the field have been taken verbatim from a lecture on "The Framing of Orders in the Field," by the late Colonel G. F. R. Henderson, C.B., Professor

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of Military Art and History at the Staff College. They are fuller than the rules for "Operation Orders" in sec. 45 of *Combined Training*, 1902, which should be read in conjunction with the rules that follow. Any point where the latter book differs from or is fuller than Colonel Henderson's *Rules for Framing Orders in the Field* have been called attention to in italics.

"Rules for Framing Orders in the Field."

"1. Heading should invariably contain number, place, date, hour." *Also the nature of the operation and the force to which it applies.*

"2. If in a town or village, it is not sufficient to head orders 'Headquarters,' the name of the locality and of the building should be given."

"3. The language should be simple and the sentences short."

"4. The handwriting should be legible."

"5. The paragraphs should be numbered."

"6. The paragraphs should be in logical sequence, so that the orders can be read through without interruption or harking back."

"7. Everything the recipient ought to know, in order to enable him to act intelligently in accordance with the spirit of the orders, should be included."

"8. In all cases where exact knowledge of the enemy's strength or dispositions is not to hand, the source of such information as is published should be invariably given. It is well, moreover, in publishing the enemy's dispositions, to say at what hour he was at such or such a place; for instance—

'According to the reports of the inhabitants, at least 10,000 men of all arms arrived at A this morning, April 10th, and were in occupation of that village at 3.30 this afternoon.'"

"9. All names and places should be printed in block capitals."

"10. If there are two places of the same name, care should be taken to distinguish which is alluded to. It will be found that there are often farms, woods, cross-roads of the same name in the same district."

"11. If cross-roads are mentioned, their exact position should be carefully described."

"12. The map used should be mentioned."

"13. Great care should be employed in using such terms as 'right,' 'left,' 'before,' 'behind,' 'front,' 'rear,' 'on this side of,'

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'on that side of.'" *The terms "right" and "left" should be used in describing river banks, it being assumed that the writer is looking down stream.*

"14. Suppositions and probabilities, as well as instructions to meet possible contingencies, are generally bad." *Combined Training*, 1902, section 45, V., further says, "*The use of such terms as 'if possible,' 'if practicable,' is seldom justified.*'"

"15. 'An order should contain nothing which the subordinate commanders who have to execute it can arrange for themselves.' —VON MOLTKE."

"16. 'No order should be issued for anything that would be done by the troops without special orders. If the troops are accustomed to have every detail of their normal duty pointed out in orders, they will get into the habit of doing nothing when orders are not forthcoming.'—VON DER GOLTZ."

"17. 'The superior officer should never prescribe to his subordinate at a distance what the latter is better able to decide from being on the spot.'—VON DER GOLTZ."

"18. 'The expression "Will await further orders" should be most sparingly used. Such a measure paralyses the subordinate leaders.'—VON MOLTKE."

"19. In an order of march it should always be stated that the head of the column will move off from, or pass, a prescribed point at a certain time. So as not to block lateral communications, the head of the column should always form up in rear of cross-roads, or the tail in front of them." *If an order refers to troops reaching a certain place at a certain time, it is assumed that the head of the main body is meant, unless otherwise stated.*

"20. Detachments, including advanced, rear, and flank guards, as well as turning columns, should have a C.O. detailed by name in orders. This facilitates the delivery of messages and reports." *Outpost commanders should also be named.*

"21. If there is in an order a single word, the omission of which would make no difference to the meaning, the order is too long."

"22. All orders sent by telegram should be most carefully numbered."

"23. An officer after writing the order should test its clearness by reading it over, and putting himself in the place of the officer who is to execute it."

"24. It is a great safeguard if, before issue, the order is read over and checked by an officer other than the writer."

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"Orders should therefore take the following form in the case of a march within striking distance, but no collision imminent:—

"(1) Intelligence about the enemy (only reliable information) sufficient to inform the next subordinate commanders of the general position of affairs. If the circumstances are changing so rapidly that it is impossible to anticipate intentions, by even a few hours, the order would merely indicate the places of assembly of the troops in the morning, ready for the march. Negative information is also important." *Information regarding our own forces may often with advantage be given, it must necessarily be given when combined operations are in progress.*

"(2) General object of the march and intention of the commander." *It is sometimes desirable to omit any reference to the intention of the officer commanding.*

"(3) Distribution of the troops by roads, or the lateral limits of the different zones within which each unit will march, with the places, &c., through or near which they have to pass, appointment of commanders of columns if necessary."

"(4) Measures of security.—*1st*, As to the cavalry in advance reconnoitring and screening; *2nd*, Composition and distances of advanced guards (or rear guard or flank guard); *3rd*, Strength, object, and direction in which any special flanking detachments are sent, and from which column to be detailed; *4th*, Arrangements for occupying any important point, &c.; *5th*, How lateral communications by columns should be kept up."

"*N.B.*—All details regarding these points are left to subordinates."

"(5) Time and departure of columns, and in some cases that of the advanced guard, main body, and train in each column." *The hour of 12 should be followed by "noon" or "midnight" written in words. In describing a night, both days should be written*, e.g. "*Night*, 30/31 *Jan*^{y}."

"(6) Places and duration of long halts for each column."

"*N.B.*—If collision with the enemy is imminent, it would be inadvisable to mention long halts, as the possibility of making them depends on the enemy's proceedings."

"(7) Sequence of trains.—These include reserve ammunition, ambulance, baggage, commissariat, hospital trains."

"*N.B.*—If collision is imminent, they would be left behind in a convenient spot, which should be known to all."

"(8) Arrangements for the relief and reinforcement of outposts."

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"(9) Special arrangements for passage of obstacles or defiles (where columns might meet) or for supplies."

"(10) Any change in the headquarters, giving the hour at which the commander will quit his present quarters and the place where he is to be found during the march."

"When a force is moving by several roads, in the proximity of the enemy, and the different units have to make a combined movement, the time of departure of each must be fixed, only, however, as far as the head of each column is concerned, each commander being left perfect freedom to form an order of march suitable to circumstances, and to issue his own orders accordingly, based on those of the superior commander."

"If, on the other hand, a force is moving by several roads, not in the immediate proximity of the enemy, and it is desirable that heads of columns should reach various points on some well-defined line (*e.g.* a river line) at the same time, then the hour of arrival on this line need merely be notified to column commanders, and they might be left to make their own arrangements as to times of starting."

Officers who wish to make a thorough study of writing orders are strongly advised to procure a copy of Trench's *Manœuvre Orders* (the price of which is only about two shillings); the subject is gone into in much greater detail than is possible in the restricted limits of this book.

I have based my form of orders throughout, as far as possible, on the form of orders given in the book above referred to, and therefore all the orders in this fourth edition are based on the same method, and have the same sequence of paragraphs, except that I have omitted what is paragraph 3 in most of the specimen orders given by Lieut.-Colonel Trench, viz. "The distribution is given in the margin." Considering that the distribution of the troops in the margin is quite apparent, it seems superfluous to call attention to it. It is, however, quite easy to insert this paragraph if desired.

Whenever the units of a force are quartered or encamped at some distance from each other, they should not, as a rule, be brought together prior to moving off, but should "flow" into the line of march at some fixed point. This point is termed the "starting point," and the advanced guard should be formed up sufficiently far in advance as to be ready to move off without delaying the departure of the main body from this "starting point." This method avoids parading corps unnecessarily early.

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Staff officers on field service or at manœuvres can carry a pocket-book with "Forms of Orders" for various purposes in their note-books, but as in an examination a candidate would have to rely on his memory, the following form of order is easily remembered, and with slight modifications could be used for a march, the attack or defence of a position, &c. :—

"March (or Halt, Attack, Advanced Guard, &c.). Orders by Brig.-General A. B., commanding such and such a force.

"*Place.*

"*Date.*

"*Time.*

"1. What is known of the Enemy. Position of other Portions of own Troops.

"2. Intentions of the Commander (as far as is necessary and advisable).

"3. Orders for the Cavalry, if to go in advance. (On a night-march, for instance, they would often come last in a column.) If independent cavalry, or an advanced, flank, or rear guard is being furnished, state its commander, composition, &c., in the margin, and its object in the body of the orders.

"4. Orders for the Artillery.

"5. Orders for the Infantry.

"6. Orders for the Engineers.

"7. Orders for the Ammunition Columns, Field Hospitals, &c.

"8. Orders as to baggage (*i.e.* second line regimental transport) and supply columns.

"9. Position of the G.O.C."

N.B.—If the cavalry go on ahead independently of the other arms, as Independent Cavalry, then a paragraph might relate solely to their movements, and a separate paragraph be added after the cavalry orders, relating to advanced guards, &c. If, however, the majority of the cavalry are with the advanced guard, rear guard, &c., and would take orders from the A.G. commander, then one paragraph could contain everything relating to the cavalry and to the advanced guard, &c.

If the commander of a force has to nominate from the body of troops under his command "Independent Cavalry," "Advanced Guard," "Flank Guards," "Rear Guards," &c. &c., for more or less independent duties, then, instead of detailing these various detachments in the body of the orders, it is more convenient to detail their strength (and commanders if necessary) in the margin, and in the body of the orders to state the duties

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required from the various bodies detached. If, on the other hand, the whole of the force is acting together and under one commander's immediate direction, as for instance might be the case in the defence of a position, then no distribution in the margin is necessary. It is very much better to issue joint orders under ordinary circumstances, rather than separate orders or instruction to individual units. *Combined Training*, sec. 45 (9). says in this connection, "It is important that all concerned should have mutual knowledge of each other's task. One order, therefore, embodying the instructions for each portion of the force, will be issued as a single document."

Any orders as to a possible retreat are, if it is necessary to issue them, communicated confidentially to a few officers only.

Specimens of imaginary orders, the one for an advanced guard by its own commander, the other for a force taking up a defensive position, are given below. In both cases the force consists of 1 Brigade of Infantry, 1 Regiment Cavalry, 1 Company Mounted Infantry, 1 Battery, and 1 Company R.E., with Bearer Company, Field Hospital and Supply Column. In the first order the principle is illustrated of giving the composition and the name of the commander of forces acting independently or semi-independently in the *margin*, instead of in the *body*, of the orders. In the second order, as the commander is retaining all the troops under his own hand, no *marginal* composition is necessary, and in both cases the principle has been followed of mentioning the troops in natural sequence, *i.e.* detachments in order of march in the first case, and in the second case troops in the order they will probably become engaged; Cavalry, Artillery, Infantry, Engineers, &c. &c.

SPECIMEN ORDER NO. I.

Advanced Guard Orders.
No. 3, by Col. A., &c.

BORTON,
1st May 1901, 6 P.M.

Independent Cavalry.
O.C., Lt-Col. C.
1st Hussars less 1½ troops.
1 Co. Mounted Infantry.

I. The *Enemy* is reported to be 5 miles N.E. of FRIMLEY. His cavalry patrols have reached FRIMLEY. Our main body halted for the night at LISS, and advances to-morrow.

Vanguard.
O.C., Lt-Col. D.
1 troop 1st Hussars.
No. 1 Battalion.

II. The *Advanced Guard* will march to-morrow *viâ* BULL INN, STOKE, GARRARDS CROSS, and FRIMLEY, towards LONDON.

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Main Guard.
In order of march.
1 Section 1st Hussars.
No. II. Battalion.
No. 1 Battery R.F.A.
No. III. Battalion.
7 Co.'s No. IV. Battalion.
No. 1 Bearer Co.
No. 1 Field Hospital.
½ Co. No. IV. Battalion.
1 Section 1st Hussars.

III. The *Independent Cavalry* will reconnoitre by the high ground on both flanks of the line of advance. An officer's patrol will be sent at daybreak to WICK to ascertain if the Railway Bridge there is still intact.

IV. The *Vanguard* will move 1 mile ahead of the Main Guard.

V. The *Main Guard* will start at 6 A.M. from the market-place.

VI. The *Outpost troops* will concentrate at the BULL INN, as soon as the Cavalry have reached the line of the River YARE, and join the column.

VII. The *2nd line transport* and supply column will remain parked at BORTON until further orders. Escort, ½ Co. No. IV. Battalion.

VIII. The *O.C.* will march at the head of the Main Guard.

Dictated to representatives of units,
one copy to O.C. Outposts by
Sergt. T.

By Order.
B.,
Brigade-Major.

SPECIMEN ORDER NO. II

First Brigade Orders.
No. 12.

BARE FARM,
May 22nd, 1901, 10 A.M.

I. The enemy is advancing in force. His Cavalry patrols have reached the line ALTON, RED LION, BYNG'S LODGE.

The 2nd Brigade is marching from BRAY to our support.

II. The 1st Brigade will take up a position from TILFORD to TURPINS WOOD, to oppose the crossing of the River Yare.

III. The bulk of the Cavalry under Lt.-Colonel A. will cover our right flank, the remainder our left. All points of vantage for dismounted action will be fully utilised. Information is especially required as to the direction in which the main portion of the enemy is advancing.

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IV. The Artillery will take up a suitable and as far as possible a concealed position south of BARE FARM. It will not open fire without instructions.

V. The Company Mounted Infantry will hold as advanced posts the Southern Edge of HARE WOOD, and STOKE HILL; when forced to retire they will form up North of BARE FARM. No. I. Bn. will occupy the Spur North-West of TILFORD, and TILFORD; No. II. Bn. will occupy a front of about 800 yards with left holding the FACTORY. No. III. Bn. will prolong to the left of No. II. Bn., and hold TURPIN'S WOOD and the Spur to the South of it. No. IV. Bn. will be in general reserve North of BARE FARM.

Natural cover is to be improved, and the front of fire cleared as far as time permits, and the FACTORY building placed in a state of defence.

VI. The O.C. R.E. will prepare for demolition TILFORD BRIDGE and NEW BRIDGE. They will not be destroyed without orders from the Brigadier. All boats will be brought to the near bank. The remainder of the Company will place BARE FARM in a state of defence.

VII. A dressing station will be established just off the road ½ mile N.W. of BARE FARM, and the Field Hospital will be one mile to the North-West of the same farm.

VIII. The Baggage and Supply Column, with the escort already detailed, will be with the Field Hospital.

IX. The G.O.C. will be at BARE FARM.

B. O.

Verbally to C.O.'s. (Signed) C. D.,
Copies by orderlies to all units concerned. *Brigade-Major.*

Both these orders have been drafted on imaginary situations in connection with the "Frimley" "River Yare" Map (Map No. II.*a*). It is not pretended that the tactics or dispositions adopted are the best possible; the orders are merely given as illustrating the principles contained in this chapter.

N.B. WICK is not on the map.

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CHAPTER V

ADVANCED GUARDS, REAR GUARDS, FLANK GUARDS

ADVANCED GUARDS

Points to be Observed in connection with Advanced Guards

THE principles guiding the action of an advanced guard should be (1) not to allow the progress of the main force to be interfered with; (2) if it is unavoidably checked, the control of the action must remain with the officer commanding the main force, and not with the officer commanding the advanced guard.

The general duties are (*a*) to search for the enemy and to guard against surprises; (*b*) when the enemy is met with in small numbers, to push back his advanced troops and prevent the march of the main body being interfered with; (*c*) when the enemy is in superior numbers, to check his advance so as to enable the main body to make the necessary dispositions to oppose him by taking the best position available; (*d*) if the enemy is found to be in a defensive position, to thoroughly reconnoitre the position without committing the advanced guard to a real engagement, and to take up the best ground possible.

The strength of an advanced guard varies with the size of the force; the larger the force, the larger the advanced guard may be, varying from one-fourth to one-eighth. The nearness or distance of the enemy will also affect the strength. It will usually be composed of all arms; the proportion of each arm depends on the nature of the country and the purpose for which the advanced guard is required.

An advanced guard is divided into two parts: (*a*) vanguard, (*b*) main guard. The former will be composed mostly of mounted troops and may be supported by infantry, but if the country is open, and there are sufficient mounted troops, infantry may be dispensed with. The main guard comprises the remainder of the troops of the advanced guard. Field artillery will not usually be with the vanguard. Engineers will frequently be

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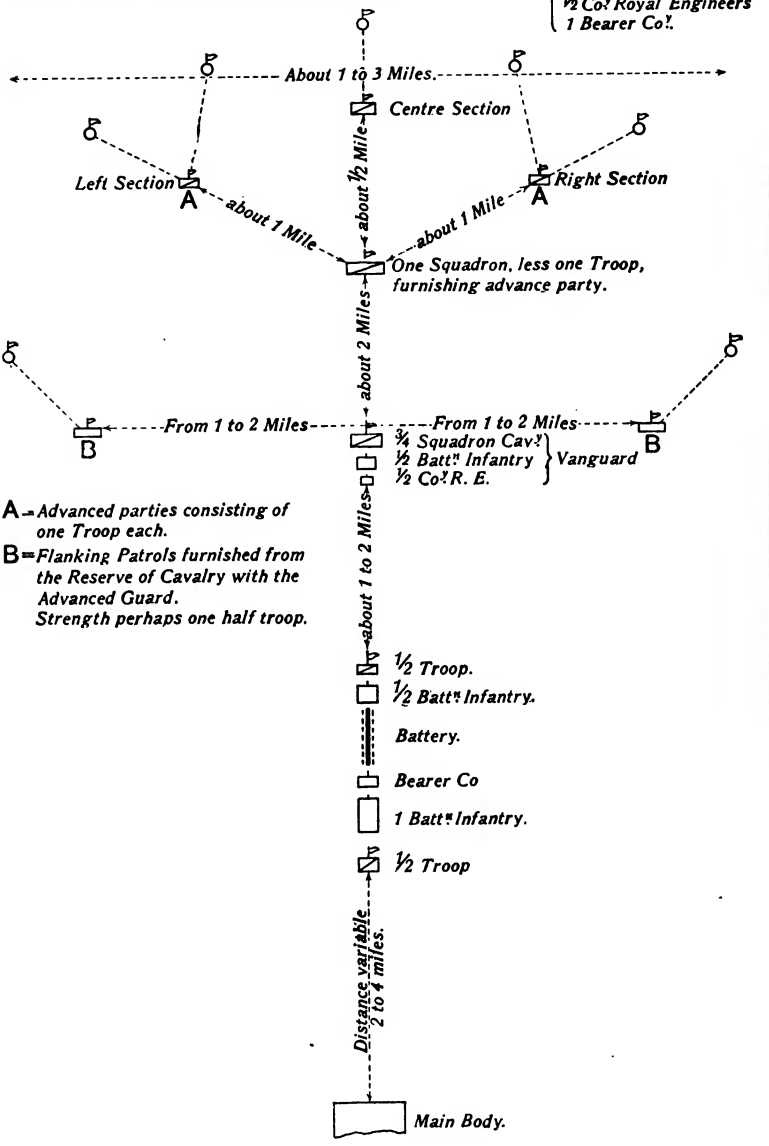
PLATE 1

Diagram of an Advanced Guard to a Mixed Force consisting of { *2 Squadrons Cavalry; 2 Battalions Infantry; 1 Battery Royal Artill.ʸ; ½ Coʸ Royal Engineers; 1 Bearer Coʸ.*



A = *Advanced parties consisting of one Troop each.*

B = *Flanking Patrols furnished from the Reserve of Cavalry with the Advanced Guard. Strength perhaps one half troop.*

To face page 29.]

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required well ahead of the main guard, and, generally speaking, the order of march of the main guard will be that in which the troops will be required to come into action. Artillery should always be preceded by sufficient infantry to protect it.

The distance between the different parts of an advanced guard should be such as to afford each other mutual support. This of course would vary with the nature of the country, as also with the strength of the advanced guard. The stronger the advanced guard, the further apart may be the different portions. The closer the country, the closer together must be the different portions. Dispositions should be such as to give increasing resistance from front to rear, the main guard being at such a distance in rear as to give it time to deploy before the vanguard is driven in on it.

If an advanced guard position has to be taken up, the extent of front may be nearly double that required for an ordinary position.

A retreating force also needs an advanced guard, though in most cases only a small one, but in any case it should comprise a strong body of engineers to move obstacles, prepare bridges for demolition, &c. It should invariably be accompanied by some mounted troops to guard against surprise.

The diagram given in Plate I. is intended to roughly illustrate the principles on which an advanced guard (in this case two squadrons cavalry, a battery, a half company R.E., two battalions infantry, and a bearer company) might be divided up for advanced guard duties. The distribution of the most advanced cavalry will of course be such as to suit varying conditions, and the officer commanding the advanced squadron might well prefer to throw forward smaller bodies than are indicated in the diagram, retaining a larger force in support.

The country is supposed to be ordinary English country, neither very open nor yet much enclosed.

I have assigned to the vanguard the maximum of cavalry and the minimum of infantry compatible with safety, and to the main guard the maximum of infantry and the minimum of cavalry. The advanced guard being a very small one, the guns are with the main guard. If it was known that there were bridges, &c., ahead which required repair before guns, for instance, could cross, it might be desirable to have the half company R.E. with the vanguard. In the same way it might possibly be desirable to have a section of the battery (two guns) with the vanguard, but though circumstances may arise when it is necessary to divide up

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a battery, especially in rear guard actions, in this case the distance between vanguard and main guard is so small that the battery could very rapidly traverse the distance, and the loss of time would be inappreciable. *Combined Training*, moreover, says that field artillery will seldom accompany the vanguard, and if the advanced guard is strong in mounted troops and the country is open, infantry will not as a rule form part of the vanguard.

As regards the cavalry, it is divided up into an advanced party, a support, and a reserve. The latter move as a formed body at the head of the vanguard infantry. The squadron in support furnishes the advanced party; possibly three sections or even three troops. This would vary with the ground, but on this advanced party devolves the reconnoitring. These sections or troops are in turn preceded by scouts. If the force is advancing by a road and there are parallel roads within a convenient distance, the flank troops or sections might be on these parallel roads; but if, on the other hand, the country is open, the advanced party would probably open out.

The reserve, *i.e.* the formed body of cavalry at the head of the infantry in the vanguard, furnishes flanking patrols on each flank, the advanced party is only responsible as far as its flank sections extend. If the enemy is armed with long-ranging guns, the distances between the component parts of the advanced guard, and particularly between it and its main body, may have to be increased; but if the enemy has such guns a proportion of them will also probably accompany one's own advanced guard.

Combined Training, 1902, sec. 87, in a note says, "In open country mounted patrols should seldom be less than four or five miles distant in advance, and on the flanks of the main body. In any case all ground within effective artillery range of the line of march must be searched."

If the country has to be searched to such a wide extent on the flanks, a proportionately larger force of mounted troops must be detailed, or the main body must provide separately for the security of its flanks.

Advanced Guard Positions

An advanced guard position requires much greater width (it may be nearly double that of an ordinary position), and much less depth, as no large reserve is required, the object being (*a*) to

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give the main body in rear time to get into position; (*b*) to make the enemy show his strength; (*c*) to deceive the enemy as to your real intentions. When in the proximity of an enemy a position should not be too far ahead of the intended main position, otherwise the advanced guard may get hopelessly engaged with superior forces and driven back on it. This would have a bad moral effect on the troops holding the main position, in addition, if the advanced guard is reinforced from troops holding the main position, the latter will thereby be weakened, and the battle might eventually be fought on different ground to that originally contemplated.

An advanced guard would often be pushed forward to take up a position, when it is intended to hold a particular point, such as a bridge, or mouth of a defile.

When an advanced guard has taken up a position, the first troops from the main body to reach it will probably be artillery (in the case of an army corps being the main body, very possibly the corps artillery), and it is desirable when selecting the position for the artillery of the advanced guard, to try and choose one on which there will be room for the deployment of more batteries when reinforcements arrive.

Orders for an Advanced Guard by the Commander of the Army

Orders for an advanced guard would ordinarily include the following:—

1. If within striking distance, the probable direction and position of the enemy, and position of other portions of own forces.

N.B.—If it is known that the enemy is in position, the advanced guard commander should receive instructions as to the course he should follow if he finds the enemy advancing from, retiring from, or moving to a flank from the position.

2. The general object of the march and the intention of the commander.

3. The strength and composition of the advanced guard, its commander, the distance the main force will be in rear. The hours of starting, and the starting point for the main body.

4. The road or roads by which the advanced guard should march, also the distance it is to go, points to be named.

5. If there are any lateral roads, orders should be given

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as to reconnoitring the same, and how far, also by what route to return

6. Steps to be taken in the event of the enemy being met with (1) in large numbers, (2) in small numbers.

7. To what place or to what body of troops reliable information is to be sent back.

(8) Orders regarding seizing any particular points before the enemy.

N.B.—If this is to be done, push on as many cavalry as can be spared, mounted infantry, horse artillery, and machine guns, and support as soon as possible with infantry.

9. Disposal of second line transport, &c., belonging to the advanced guard troops. (This would usually follow with the main column, and at the head of the other baggage. When the enemy is likely to be encountered, it is most important that the advanced guard should be free of impedimenta.)

Orders for an Advanced Guard by its own Commander

Orders for an advanced guard by its own commander would probably include the following:—

1. Information as to the enemy and other portions of own forces.

2. Intention or instructions received by O.C. advanced guard.

3. Distribution and commanders and order of march of troops.

4. Orders for the cavalry, if they are to act independently of the vanguard.

5. Order for the vanguard. Distance in front of main guard.

6. Order for the main guard. Order of march. Commander. Starting point. Hour of start.

7. Order for the flank guard (if necessary).

8. Orders for outposts. Hour of withdrawal. Place they will take in column.

9. Disposal of second line transport (if any).

10. Any orders as to ammunition, rations, &c.

11. Position of commander of the advanced guard.

A specimen of advanced guard orders is given at the end of the preceding chapter.

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REAR GUARDS

Points to be Observed in connection with Rear Guards

A rear guard in a retreat should be formed and composed as an advanced guard, viz. of all three arms; it should contain the freshest troops, and should be especially strong in cavalry and artillery and mounted infantry, as they can retire quickly, and are the arms that the enemy will use largely for pursuit. Artillery, too, is of the utmost importance, because of its long-range fire. If guns are carefully distributed and concealed, it renders the reconnaissance of the position by the enemy extremely difficult, and he may long remain in doubt as to whether a rear guard merely, or the main body, is in occupation of the ground. The guns, of course, must be mobile. The strength of a rear guard in comparison to the main body may vary from one-fifth to one-third, but there will generally be a large proportion of guns. Cavalry and mounted infantry should be kept in the rear, and well to the flanks, and should not lose touch with the enemy. Infantry should seldom be detached to the flanks.

The chief object of a rear guard being to delay the pursuing enemy, it should therefore compel him to deploy. This is best done by occupying a series of defensive positions. The enemy should be kept at as great a distance as possible. In retiring, the least threatened portion of the infantry would generally move first, covering the retreat of the remaining troops. The mounted arms would probably profit by their mobility to remain till the last, and then rapidly retire. To render the rear guard as mobile as possible, it should be lightly equipped and have no baggage; but there should be a "bearer company," or portion of one, and some ambulances.

Great opportunities are afforded to skilful leaders in conducting rear guard actions. Ambuscades may be planned and various artifices resorted to in order to check pursuit and compel careful reconnaissance. The great difficulty is to know when to retire. If a rear guard holds on too long, it runs great risk of getting cut off from the main body. On the other hand, there are occasions, such as when the main body is moving through a defile, when the rear guard must hold on at all hazards. It must never allow the main body to be shelled. Generally speaking, the object of a rear guard may be best attained by so skilfully occupying a position as to induce the enemy to believe that

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a larger force is holding it than is really the case, and when time has been gained by compelling a reconnaissance and deployment for attack, to move off to another position previously selected, and some considerable distance ahead. A rear guard cannot ordinarily afford to occupy a series of positions close together, for if its own main body is marching at an ordinary rate, the gap between it and the rear guard will be constantly increasing, while, on the other hand, that between the enemy's advanced guard and its main body is as constantly diminishing. There is a danger, too, while the rear guard is being held or contained by a portion of the pursuing advance guard, that a force may be detached to try and cut in between the rear guard and its main body. The rear guard mounted troops must be continually on the watch against this.

Rear Guard Positions

A rear guard position should be of great defensive strength, should have its flanks secure, and should possess good lines of retreat. It should only require a small force of infantry to defend it, but there should be commanding artillery positions, with a view to fire taking effect at long ranges, thus compelling the enemy to deploy at a distance. Artillery posted well away on the flanks, provided it has a strong mounted escort, will often be extremely effective. To attack the position in front should cause the enemy serious trouble, while if he attempts to outflank it, he should be compelled to make a wide détour; this will delay his pursuit, and the object will be gained. Hence the necessity of cavalry being placed on the flanks to give timely warning and, if possible, prevent these turning movements. Reconnaissances of positions in rear to fall back on should be made before troops retire, a staff officer being sent back for the purpose.

The extent of front occupied may, as in advanced guard positions, be much greater than that for ordinary positions, only a very small body being needed in reserve, and the troops should be so disposed as to induce the enemy to believe that a much larger force is holding the position than is really the case. Signalling, or other means of communication, between all parts of the rear guard should be arranged; and no measures for impeding pursuit, such as blocking roads and fords, destroying bridges (if permitted), demolishing railway and telegraphic communication, should be neglected.

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Orders for a Rear Guard by the Commander of the Army

Orders for a rear guard covering a retirement would include the following:—

1. Information regarding the enemy.
2. The general object of the march, the point the main force is intended to reach.
3. The road or roads by which the rear guard should retire.
4. The strength and composition of the rear guard, its commander, also the distance it must try and keep from the main force. (The order of march would be left to its commander.)
5. If the enemy is to be delayed at any point (such as bridges or defiles) for any particular time, the same to be noted.

N.B.—Bridges, &c., should not be destroyed without orders from the officer commanding the main force, nor should villages be burnt, or property destroyed, because the retreat may be only temporary, and the bridges, villages, property, &c., may be needed when the country is reoccupied.

6. Special instructions regarding cavalry reconnoitring well to the flanks and how far.
7. Disposal of baggage, &c.
8. The position of the commander to whom all reliable information should be sent.

The orders for a rear guard by its own commander would be based on those given for the advanced guard, the orders for the main guard coming first, and then the orders for the rear party and the cavalry.

A force advancing must sometimes have a rear guard, especially if the enemy be mobile, or his irregular auxiliaries, such as *franc tireurs*, render attacks on the rear and baggage probable.

If, however, no organised attacks are possible, then a small infantry rear guard, with a few cavalry added, will generally suffice to keep off marauders and to collect stragglers and deserters.

FLANK GUARDS

When a force is moving to a flank, in the face of the enemy, it is best formed, if the nature of the country will permit, in several columns within easy reach of one another, and advancing by successive columns from the inner or protected flank, each column would have small advanced and rear guards for its own immediate protection. As a protection to the flank of the whole, a flank guard

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would move on the exposed flank, composed and formed somewhat as follows: cavalry pushed well to the exposed flank and formed as for reconnoitring to the front, but turned right or left as the case might be, they would be supported by infantry and artillery, who would move at such a distance to the flank from the main force that, if attacked by the enemy, the main force could not be shelled and would have time to deploy to the flank threatened. Its formation, in fact, would be similar to that of an advanced guard, except that, instead of being formed to the front, it would be formed to a flank.

All cavalry not used for reconnoitring as well as impedimenta would march on the inner or protected flank. If, as would generally be the case, a road parallel (or more or less so) to that used by the main body is available for the baggage and train; then it would be very convenient to utilise this. Not only in this way is a smaller flank exposed to the enemy's attack, if he brushes aside the flank guard, but by marching in two columns instead of one, the distance is traversed more quickly, and only the combatant column meets the attack. An advance in echelon from the protected flank is desirable, so that by the time the enemy's attack has been pushed home, it will fall on the rear rather than on the flank of the column on the march. All defiles or defensible points of passage on the exposed flank should be reconnoitered or held till the main force has passed by, the defenders entrenching themselves if necessary; and if they are infantry, falling in in rear of the column, as soon as it is safely past the positions they have been holding. Mounted infantry is especially valuable for this purpose. Artillery with a flank guard may be divided between the head and rear of the column, so as to be at hand if the column is attacked in front, and if attacked in flank they can more easily manœuvre and afford general support. If any obstacles exist on your flank, they should, if possible, be kept between you and the enemy.

If direction is changed during a march, the flank guard may often conveniently become the new advanced guard, or fresh troops be detailed for this purpose, whilst the old advanced guard becomes a flank guard.

It is well to note here that there is no particular in which Indian North-West Frontier warfare more differs from European warfare than in the conduct of rear and flank guards. Officers who require information on the method of conducting rear guards and flank guards in Indian frontier warfare are advised to read the supplement to this book, entitled *North-West Frontier Warfare* (Thacker, Spink & Co., Calcutta).

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CHAPTER VI

OUTPOSTS

Points to be Observed in connection with Outposts

WITH a force of all arms, outposts are generally distributed in three parts—

(*a*) Outpost mounted troops.
(*b*) Outpost companies.
(*c*) The reserve.

The outpost companies generally have a few mounted men attached, and are ordinarily divided into piquets and supports, and may provide detached and examining posts.

The piquets more especially provide sentries and patrols.

The object of outposts is—

(*a*) To obtain information regarding the enemy, and thus guard against surprise.
(*b*) To prevent the enemy obtaining information regarding you.
(*c*) To give repose to your own troops.
(*d*) To check the enemy's advance, and thus gain time for the main body to form up.

To gain these points: two lines are taken up—

(1) A line of observation.
(2) A line of resistance.

N.B.—They may be one and the same line.

A line of observation is taken up in such a position as to fulfil the conditions (*a*), (*b*), and (*c*); a line of resistance to fulfil conditions (*b*) and (*d*). The more important of the two is the first. Outposts being chiefly for the purpose of getting information, reconnoitring should never be neglected. For this purpose, cavalry, mounted troops, and occasionally cyclists are required both by day and night, as infantry alone could not reconnoitre sufficiently far, especially by day. Infantry, however, must often assist in the patrolling, and infantry patrols, particularly at night, should be frequently sent out, especially along all main roads and approaches, and if possible they should be a mile to the front at daylight, as that is a most likely time for attack.

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Patrols should be informed of the general direction of the roads they are to go and return by, and, if the enemy is not in the proximity, the distance they have to go, also of any particular points on which information is required. They should, with reference to the enemy's outpost line, endeavour to obtain information regarding the number and position of the enemy's sentries, the nature of the ground in front of and between the enemy's sentries, the position of the enemy's piquets, the hour the enemy sends out patrols, their general direction, and their usual strength.

The line of resistance should as a general rule in undulating country be within infantry range of all ground whence hostile guns might fire either on the main body bivouac, or on the ground which it may have to occupy in case of attack. This would probably be in advance of the position it is bivouacked on.

It is not always practicable to obtain an outpost position in advance of the main position, either because no suitable ground exists or because it is too far away, or the force is too small, or the country is too close, or, again, if the enemy is quite near at hand. In such cases the outpost and main position will be synonymous, and increased vigilance on the part of the reconnoitring parties must compensate as far as possible for the proximity of the outposts to the main body.

Outposts at night may sometimes occupy the same position as by day, but they are never to be drawn back except for some adequate tactical reason, such as to hold the crossing of a river or the junctions of important roads.

Map-reading is most important to enable one to select good positions for piquets, sentries, &c., as well as a good general post.

By day, in open country, mounted troops chiefly will be employed on outpost duty, supported if necessary by infantry. When mounted troops are attached to infantry for outpost duty, and there is no independent cavalry in advance, they should endeavour to keep in touch with the enemy and to guard the flanks. If the enemy is beyond reconnoitring distance, the mounted troops should at all events at daybreak make sure there is no enemy within ten miles of the position. If the front is clear to that distance, a serious attack during that day by a large body of the enemy is improbable, owing to the long distance its main body would have to cover. A few cavalry (two or three) as orderlies should be attached to each infantry piquet, if available. If there is independent cavalry in front, mounted troops should throw out

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posts and patrols to the front and flanks, and keep in communication with the independent cavalry as far as possible.

In enclosed country, and by night, the roads more especially require most careful watching and holding, though the country between must not be neglected.

Outposts at night should seldom be drawn in closer, and any alterations in the dispositions which should have been previously arranged, should be carried out after dusk. Roads and tracks require very careful watching, as in the dark, except in open country, the enemy could hardly advance except by roads and paths.

By night, infantry will usually be employed for outpost work, but cavalry may with advantage be employed for patrolling to a distance, or when it is required to watch particular points beyond the reach of infantry, in which case cavalry "standing patrols" may be posted to watch these points. It very often happens that there is a river line, for instance, too far to the front to be watched by the infantry piquets, and in such a case cavalry "standing patrols" might very advantageously be employed to watch the fords and bridges, and early information of any forward movement on the enemy's part would thus be obtained. If these standing patrols are posted beyond the line occupied by day, it is most disconcerting to an enemy carrying out a night attack in accordance with observations made during the day to stumble on a hostile post sooner than is expected.

When by day there are mounted troops in advance, and the country is well suited to their employment, a few infantry companies will be quite enough to hold the main outpost position as long as the mounted troops are in front.

If, however, the country is intricate and wooded, and the infantry outpost line is almost in touch with the enemy, cavalry reconnoitring patrols and standing patrols must be very sparingly used, as a mounted patrol in close country, especially at night, is necessarily taken at a great disadvantage if it meets with a hostile infantry patrol.

Artillery are usefully employed with outposts to defend a defile or important line of approach, or when the outposts are within reach of favourable hostile artillery positions, or are in occupation of the main defensive position. Machine guns are also very useful in order to fire on certain points or approaches which the enemy is likely to utilise.

In placing outposts, either on the map or in the field, it is well to assign to each company available for outpost duty a

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definite frontage, from and including some point to some other natural or artificial feature. Roads should not be made the limit, unless it is most distinctly laid down as to which company is responsible for their defence. The limit should therefore, as a rule, be well beyond the road in question.

It is not possible to say what extent of front a company should watch; it depends on the strength of the company, the character of the ground, the proximity of the enemy, the number of roads to be guarded, &c., and the number of cavalry or of mounted infantry in front. Piquet posts should always be well entrenched, tactical communications opened out with neighbouring piquets, and, if the position is to be held for some time, obstacles made, fords and bridges blocked, and houses, &c., placed in a state of defence.

As a rule, the piquet line will be the line of resistance, the supports and then the reserves (if any) reinforcing the piquets and detached posts.

The strength of outposts should seldom exceed one-sixth or one-seventh of the whole force.

Flanks, when exposed, should be carefully and strongly guarded.

Against an uncivilised enemy, sentries should be close to their piquets.

The usual distances in European warfare are—

Sentry posts from piquets, up to a quarter of a mile.
Supports in rear of piquets, one quarter to half a mile.
Reserves in rear of supports, one quarter to half a mile.

These distances vary with the nature of the country and atmospheric conditions; for instance, in foggy weather the several parts must be drawn close together, and placed within easy connecting distance.

Sentries should not be posted where there is not, by some means or other, communication between themselves and their piquet. They should never be placed where they can be seen by the enemy. Communications between the supports and piquets should be kept up by the former; between the reserves and the supports also by the former. If the outpost position is long, it should be divided into sections. In the case of an outpost position being divided into sections, orders regarding the disposition and strength of the piquets and supports would be given by the officer commanding the section. Piquets, supports, and reserves should be composed, if possible, of complete units, *i.e.*, companies, half-companies, sections, &c., under an officer.

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Groups may be employed, or pairs of sentries posted direct from the piquet, but under ordinary circumstances the group system is preferable, as it gives the sentry greater confidence and saves much fatigue in reliefs, and there are extra men available to communicate with groups on the right or left, to take temporary charge of deserters or suspicious persons, or to convey messages to the piquet.

On the other hand, if the piquet is a small one, and has to furnish several groups, very few men will be left under the immediate control of the piquet commander, and when this is the case, and the sentry posts are near at hand, it is sometimes more convenient to find the reliefs from the piquets. The piquet commander will then have, in case of attack, a large body of men immediately available for concerted action. Groups consist of six men and a non-commissioned officer.

Detached Posts usually consist of from six to twelve men, under an officer or non-commissioned officer. They may be much stronger, and they might be employed on a flank to watch some particular road by which the outpost line may be turned, or in front of the line, to watch some place, such as a village, the possession of which would be a great advantage, as it might enable an enemy to observe the outposts, or to form up preparatory to an attack. Detached posts may also be used to maintain communication between piquets lying unusually far apart, or, when patrolling is not possible, to watch ground in front, and in extreme cases to maintain connection between the outposts and the main body. Special orders or instructions should always be given to the commander of a detached post.

Examining Posts will be established at one or more points where main roads pass through the outpost position; they consist of an officer or non-commissioned officer, and a few men. They are usually placed in the general line of sentries.

The *Supports* and *Reserves* would be posted with reference to the conditions contained in the order by the commander of the outposts. There will usually be one support to every one or two piquets, and the piquet line will as a rule be the line of resistance. In exceptional cases the support line may be the line of resistance, in which case the supports must strengthen and entrench their positions. Supports are best placed at night on roads leading to the piquets, and may, if considered necessary, be placed closer to them than by day, or even on the same ground with them both by day and night, if the ground on which the piquets are is the best both for observation and resistance. Reserves will

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only be required in case of a large force, or if the outposts are occupying the main position, which must be held at all costs till the main body can form on it. The strength will vary, but complete units should be employed, and guns and mounted troops may be attached.

Orders with Reference to Outposts

Orders by the Commander of the Force

The commander of the outpost company will be with the supports. One support may be equal to one or more piquets, that is, half a company or squadron might be in support, having two piquets, each a section or a troop strong.

The general officer commanding issues orders regarding the outposts; these orders might state generally:—

1. Any information regarding the enemy, our independent cavalry, and other portions of our own forces.
2. Where the troops will halt, the name of the commander of the outposts, what troops are placed under his orders for the purpose, and what commands will supply them.
3. Ground the main body will occupy in case of attack.
4. The general position to be held by the outposts, and any points which require special watching.
5. If the outposts are attacked, the extent of resistance which should be offered.
6. In what direction outposts should fall back if necessary.
7. The hour at which outposts will be relieved.

Orders by the Commander of the Outposts

The commander of the outposts will then issue orders as follows:—

1. Information as to enemy, the country in front, and the object to be attained.
2. Where the main body will camp, billet, or bivouac, and the ground it will take up if attacked.
3. The approximate position to be held, and its allotment to troops by sections, including limits of each section or company. Position of the reserve.

N.B.—Exact limits should be noted, and any important road or village allotted entirely to one unit.

4. Disposition of the outpost mounted troops.
5. The disposition in case of attack, the line of resistance generally, and the direction of retreat, if necessary.

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6. Measures for securing the flanks and particular points to be prepared for defence, and arrangement of communications.

7. Any special orders regarding patrols and the distance they have to go, whether any are to be sent from supports or reserves.

8. Special night arrangements.

9. Arrangements regarding cooking and supplies, lighting fires, and smoking.

10. Special patrols, if any, from supports or reserves.

11. Signalling arrangements, and to which piquets, signallers, or cavalry orderlies are to be attached.

12. Orders regarding inhabitants, &c., reception of deserters, positions of examining posts.

13. When outposts will be relieved.

14. Position of commander of the outposts.

N.B.—Some of the points in this order might be dealt with in standing orders, and if this is the case, the orders by the outpost commander could be curtailed to some extent.

Orders by a Commander of a Section of the Outposts

The commander of a section of the outposts in turn issues his orders, based on and in somewhat the same form as the orders issued by the outpost commander. If, however, there is no outpost commander, and the troops on outpost are not all furnished from the same command, each "section" commander issues his own orders.

If mounted troops in the case of a mixed force are doing the outpost work which infantry usually does, then what has been said as to infantry outpost companies, divided into piquets and supports, will equally apply to mounted troops. The advanced portion of the latter may form by day a screen several miles to the front, and, if they are withdrawn at night, they will try and maintain touch by means of standing patrols or otherwise. Again, if reconnaissance, merely in order to keep touch with the independent cavalry, is required, suitable patrols may be sent out from time to time, or a certain proportion of cavalry or mounted infantry may be allotted to sections or to outpost companies, to reconnoitre within well-defined limits.

It is well to remember that the system of night outposts in Indian North-West Frontier warfare differs absolutely from that pursued under European conditions. The subject is fully discussed in the supplement to this book, *North-West Frontier Warfare* (Thacker, Spink & Co., Calcutta).

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CHAPTER VII

TACTICS OF THE THREE ARMS COMBINED

Offensive Operations

The Action of Mounted Troops.—A force in a hostile country will invariably move with its front and flanks covered by mounted troops in order (1) to reconnoitre the country and roads and gain accurate and early information regarding the enemy's movements, strength, and dispositions; (2) to drive back the hostile mounted troops and so prevent the enemy discovering one's own strength and movements; (3) to cover a movement to a flank, or to undertake enterprises against the enemy's communications or line of retreat.

This screen of mounted troops will, except the force it is covering be a very small one, almost invariably consist of the "independent cavalry." This cavalry, moving often several marches ahead of the main body, will spread itself out in a fan-shaped formation, and thus proceed till it comes into contact with the hostile cavalry and mounted troops. The latter, even if they are considerably inferior in numbers, will very likely endeavour to pierce this screen at one or more points, and if their own main body have taken up a defensive position, the hostile mounted troops, of whom horse artillery will probably form a part, will often hold positions far in advance of the main position, in order to delay their opponents' advance, to cause him to prematurely deploy, and to form points of *appui* from behind which they may issue unexpectedly to inflict a blow or to gain information.

The rôle of the independent cavalry will of course be to drive back these troops on to the main position, or, at all events, to the outpost position. If prisoners can be made, so much the better, but till these advanced troops have been driven back, no reconnaissance of the main position can be effected. It is quite possible that the advanced positions taken up by the hostile mounted troops are too strongly held for the independent cavalry to succeed in forcing them, but every hour will be bringing othe

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mounted troops, which are moving at the head of the advanced guard or guards, nearer and nearer. On the arrival of the latter the independent cavalry will probably assist in driving back the troops in the advanced positions, and may even assist in attacks on the outposts, but it is more probable that it will have received orders to undertake further enterprises, such as the endeavour to discover where the flanks of the main position rest, or to seize and hold some points of vantage on the flanks, or some point on the hostile line of communications. All very important points on this line will probably be strongly held, but the moral and even material effects of attacks on the line of communications will be great.

The mounted troops with the advanced guard, as distinguished from the independent cavalry, will of course have their usual duty of providing the vanguard, either wholly or partly, of the advanced guard; and their mobility will enable them to seize and hold various important points till the main body or other troops arrive. During the main action these mounted troops will frequently be employed in enterprises against the flanks of the hostile position, and in protecting the flanks of their own force. Their mobility admits of their being rapidly transferred from one part of the field to another, either to reinforce a threatened point or to aid in some assault.

The reconnaissance and wide turning movements by all mounted troops during an action must not be lost sight of. Hostile turning movements, if attempted, should be at once reported and guarded against, and, on the other hand, opportunities may occur for wide turning movements against the enemy far beyond the scope of the infantry, and for cutting in on and possibly blocking, by the demolition of an important bridge, a principal line of retreat or communications, which is not guarded in sufficient force.

When it is evident that the enemy is about to abandon his position, the mounted troops will be held in readiness, backed up by all available infantry and guns, to pursue him vigorously; this will best be done by pressing his rear guard closely, threatening its flanks and attempting to cut it off from the main body; they will also, if possible, push on towards the latter, round the flanks of the rear guard, so as to harass the flanks of the main body and give it no time to rest or to re-form. On no account should the touch be lost with the retreating enemy. Fatigue on the part of the troops, or exhaustion of the horses, is no excuse for not pursuing vigorously. Horses cannot be used up in a

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better cause, and a vigorous pursuit may go far towards terminating a campaign. The way in which the Prussians, despite the many hours they had been on the march, carried out the pursuit after the battle of Waterloo is an example to all time. If, on the other hand, the attack fails, the mounted troops must do all in their power to assist in the safe withdrawal of the main body; this will best be done by assuming a bold front, using dismounted fire as opportunity offers, endeavouring by skilful dispositions to draw the enemy off the real line of retreat, and, above all, guarding the flanks of the main body from being turned.

On the opposing advanced guards coming into contact, their action will depend upon what orders their respective commanders have received, though, failing orders, neither of them should assume the offensive without direct orders; otherwise a premature engagement fought on unfavourable ground, and contrary to the plans of their commanders, may be the result. If the enemy is found to be in position, it will be necessary to make a reconnaissance of his position and the approaches to it, with a view to ascertaining his dispositions, and if his outposts are evidently very weak they may be driven in. A reconnaissance in force must never be undertaken by an advanced guard commander without specific orders, nor his troops committed to an engagement. His duty is, failing orders to the contrary, to take up the most advanced position possible and use every means to thoroughly reconnoitre the hostile position.

Till a thorough reconnaissance of the position has been made, it would be premature to do more than to form up the main body troops in positions of assembly.

It may be that the strength of the position precludes an attack with any chance of success, and in this case it may be necessary to try and manœuvre the enemy out of the position, and seek for opportunities to attack under more favourable circumstances. If, however, it is decided to attack the enemy in position, it will need careful reconnaissance and consideration before deciding as to how to carry out the attack. A general assault on a position all along its length is of course out of the question; the enemy must be held or contained opposite the greater part of his position, whilst an attack in force is made on the point or points selected for assault. As a general rule, a purely frontal attack unaided by attacks on the flank or flanks, will not lead to success unless very heavy loss is incurred. In selecting a flank for attack, regard must be had as to whether it

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is the better flank strategically as well as tactically to attack. It will strategically be the better flank if an attack made on that flank will threaten the enemy's line of retreat, and will thus render his troops and defences on his other flank of little avail if the flank attack is successful. On the other hand, it is no use to attack the better strategical flank if it is tactically so strong as to give you little chance of success, for if your attack be repulsed, you fail to seriously threaten the line of retreat. It may sometimes happen that the enemy has so manifestly weakened his front or centre, in order to render his flanks more secure, that feint attacks against one or both flanks and a real assault on the centre will give the best chance of success. In any case, whether it be the flanks or the front which is attacked, it is absolutely necessary to establish a superiority, moral or physical, at the decisive point. Most careful reconnaissance is necessary before committing oneself to the assault. It is only an advanced guard, closely backed up by its main body and pursuing a beaten force, which can afford to attack without a long and very careful reconnaissance, and, even so, it is only justifiable when time is of all importance. Meanwhile the main force will be arriving near the position, and will be so placed, out of range of the enemy's artillery, and in such order, as to be ready to assume the attack in the part assigned to it.

Artillery.—The artillery, which should be forward in the columns, will be ready to come into the position or positions selected for it, under the protection of the advanced guard. When in action, they will first direct their fire against the artillery of the defence, so far as it is possible to locate it, subsequently against the points in the position that it is intended immediately to attack, and those whence the attack might be enfiladed. This use or phase of the artillery in the offensive is termed the "Preparation of the infantry attack." Artillery should not be put closer than 600 yards to their own infantry *on level ground*, otherwise the latter may suffer from premature bursts, nor, on the other hand, *on level ground*, should artillery continue firing when their own infantry have advanced to within 600 yards of the target. At ranges under 1500 yards and on level ground, artillery cannot fire at all over its own infantry, but if, on the other hand, the enemy is in a commanding position, guns can continue firing till their attacking infantry are close up to the crest. Fire should not be opened, if it can be avoided, in positions exposed to hostile "long-range" infantry fire, or within "decisive range" of the enemy's artillery, but if it is necessary that guns should proceed to

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isolated positions (a step which battery or brigade commanders should not undertake on their own initiative early in an action), or should be detached to the flanks, escorts must be specially detailed, unless the distribution of the other arms completely protects the guns against surprise or attack. This escort should, if possible, consist of mounted troops, and if none has been detailed, the officer commanding the guns in question, if he thinks it necessary, should apply to the nearest body of troops which can furnish an escort.

Every endeavour should be made by the guns to reach the first position or positions unseen by the enemy, and to remain concealed when in action. If indirect laying is employed, it is extremely difficult for an enemy to locate the guns. When the ground does not admit of concealment in advancing into action, batteries should come simultaneously into view, and in both cases fire should be opened simultaneously.

The second phase of the artillery action is the "support of the infantry attack." Whereas, in the first phase, the fire of the guns was primarily intended to silence the hostile artillery, and the concentrated fire of brigades was directed when possible on individual hostile batteries in succession, in the second phase the fire of guns and field howitzers will be concentrated as much as possible on the points selected for attack. The object of the artillery fire is to keep the defenders to the trenches, and prevent them, without exposing themselves, firing steadily on the attacking infantry, while the object of the howitzer fire is to search out the trenches and reverse slopes, and inflict loss on supports or reserves advancing to reinforce. As the infantry approach nearer to the hostile position, the fire of some of the batteries will be masked. With increased length of fuze and elevation, these batteries may still be able to inflict loss on supports and reserves behind the firing line. If, however, the fire of certain batteries becomes wholly masked, so that they have no target, they may advance from their positions, and come into action on the flank of the advancing infantry. Time and place must decide whether such a movement is to be undertaken, but the great and guiding principle laid down in the *Field Artillery Training* is, "The greater the difficulties of the infantry, the closer should be the support of the artillery."

Once the position has been won, every sufficiently mobile battery should be rapidly pushed forward to fire on the retreating enemy, and to crush any counter-attack. Should the latter, however, prove successful, and some or all the attacking infantry be

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forced back, the guns must cover the retreat, and use every means to minimise the disaster.

It must be remembered that actions where large numbers of troops are engaged will not consist as a rule of one combined struggle, but of a series of isolated engagements, and the infantry in the attack will try to gain one point of vantage as a point of *appui* for an attack on other points. In most of these isolated attacks guns will have to play their part, and brigades and batteries will often have to be dispersed.

Concentration of fire cannot be secured in the field to its full extent without concentration of guns, and even when the number of guns in these isolated attacks is small, this principle of concentrated fire should be borne in mind.

Infantry.—This arm, in the attack, is usually divided into three bodies.

It is convenient to speak of the first body as the "*firing line*," though it includes *scouts* which feel the way, reconnoitre the ground, and generally prepare the advance of the firing line.

It also includes the *supports* which follow the firing line, ready to reinforce it whenever and wherever it may need support.

The second body are the *Reserves*, sometimes spoken of as local reserves, to distinguish them from the third body, which is the *General Reserve*.

The reserves are detailed by battalion, brigade or other commanders. Their duty is to provide reinforcements to the first body or "firing line," and to protect the flanks; they may also have to extend to a flank, cover by their fire troops in front, or even provide a fresh firing line.

The third body, the general reserve, is a force at the disposal of the commander of the whole force, to confirm a success, to provide a reinforcement where urgently required, or to cover a retirement. The importance of this general reserve can hardly be over-estimated. The commander of the whole force by its means retains a certain control over the operations; and if, for instance, he sees that the point originally selected for assault is so strongly held as to render success in that portion of the field unlikely, and he learns that the enemy has moved his reserves to meet the threatened attack, he may, by throwing the general reserve into the fight, convert a portion of the holding attack into a real attack on some portion of the hostile position which has been dangerously weakened. The general reserve should therefore seldom be less than one quarter of the whole force.

The first body, that which provides the scouts, the firing line,

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and the supports, should, on the other hand, seldom, to begin with, exceed one quarter of the whole force.

It should be clearly understood that, especially where large forces are concerned, it is impossible to carry by assault the whole extent of an enemy's position; but one or more points in an enemy's position should be selected for assault. The attack on these points should be prepared by artillery fire; and the attacking infantry should be formed in greater strength, especially in depth, opposite the point or points where it is intended to drive the attack home, and in less strength opposite the portions of the hostile positions where it is merely intended to hold the enemy to his ground without actually carrying the assault home.

The distribution of the troops should in every manner possible be concealed from an enemy, so that he may not only be ignorant of the real points of attack, but also be unable to distinguish what is merely the *holding* attack. In addition to the real and holding attack, a feint attack may also be delivered, with the view of distracting the enemy's attention from the real attack. Mounted troops are especially useful for this purpose, as it will seldom be feasible or desirable to convert the feint attack into a real attack, and the troops which have carried out the feint can, if desired, be rapidly transferred elsewhere, or push the attack home at the same time as the real attack. Enfilade fire can in any case often be usefully employed to bear on the position by troops making the feint attack.

Unless one flank or another rests on an impassable obstacle, endeavour should be made to render the form of attack an enveloping movement, and to push the attack home against the weakest portion of the hostile position.

If the *real*, *holding*, and *feint* attack can be successfully concealed, the enemy will be unable to concentrate his general reserves near the points selected for assault; the main object, therefore, of the troops not destined to carry the attack home, but merely to make a holding or feint attack, should be to prevent the enemy moving troops or reserves to defend the real points of assault.

In order to prevent this, these troops must not only conceal their comparative weakness, but must act with very great vigour, and use every endeavour to hold the enemy to his position, and more particularly his reserves.

A division with two brigades alongside ordered to carry out a decisive attack on a particular portion of an enemy's position

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would cover a frontage of about 2400 yards. This front would usually be what the first line would occupy when two deep.

In the case above, if each brigade had two battalions in reserve, the battalions in the first line, including intervals, would each occupy about 600 yards, that is, the brigade would occupy 1200 yards.

When the attack is merely holding, and not to be pushed home, a brigade could occupy a much larger front and have a smaller reserve.

If it is known that the whole length of a position is lightly held, and that there is little or no general reserve—as will usually be the case when a rear guard is holding a position—the assailants can equally extend their line, and dispense with such strong reserves.

The flanking and enveloping movements carried out by the attacking force may, if the latter is sufficiently strong, resolve themselves into an envelopment well round the flanks of the hostile force, till at last a considerable portion of the original attacking army will be able to operate against the rear of its opponents. This attack against the enemy's flank and rear will be aided by long-range guns, which will in a great measure enfilade or even take in reverse the troops thrown back to meet this flank attack.

The troops thus turning the flank cannot push on practically without firing, or halting. Far from this being the case, they must advance from point to point, temporarily fortifying themselves when these positions are gained, and sheltering themselves not only from direct but also from enfilade fire. The containing force, more especially, which is holding the enemy to his ground, must very largely avail itself of cover. An attacking force thus protected is much less open to counter-attack than one which advances steadily to the assault without, so to speak, seizing and holding position after position.

Mounted troops, as has before been stated, will be largely employed on the outside flank of the turning movement or movements, and may possibly by their mobility be enabled to seize positions, and by dismounted action to hold them, until the infantry proper arrive to their assistance.

An attack on these lines will no longer be a matter of a few hours, it will be a matter of many hours, and possibly of whole days or more. Effective co-operation between the infantry and the artillery is all-important, though most difficult to arrange for. Signalling or some such method of communication

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will have to be resorted to far more than has been hitherto the case in European warfare.

Difficult as it is to clearly depict the lines on which attacks in future must be carried out, it will still be more difficult to execute them. Communication between units extending over many miles will be a matter of immense difficulty, and possibly just when the enemy appears to be gradually hemmed in by the assailant's enveloping movements, it may be found that his main force has quietly withdrawn to another position, and has left the former position occupied by a very mobile rear guard.

Pursuit

In the event of a victory being gained, the enemy should be pursued at once with boldness and decision by all available cavalry and artillery, supported by infantry; no time should be allowed him to rally or to form a rear guard. The artillery should be brought into action at decisive ranges, while the cavalry should press closely on the retreating force, harass his flanks, and forestall him on his line of retreat where a stand might be made. Above all, close touch must be kept with the enemy in order to ascertain his real line of retreat. Mounted infantry are invaluable in the case of a pursuit; and if you are not strong in that arm, every available quadruped and vehicle should be pressed into the service for the purpose of carrying infantry to the front. You cannot use up your horses of whatever branch in a better cause than that of converting a defeat into a rout. If the enemy is really broken and disorganised, opportunities will probably occur to the cavalry for charging and using the lance or sword. If, however, even a semblance of order and discipline is being maintained, so great is the power of the magazine rifle, that the cavalry will probably intervene far more effectively by rapidly seizing points of vantage and from them pouring in a well-directed fire, than by attempting to charge men who, though perhaps few in number, are well supplied with ammunition. Ambuscades must be guarded against and due circumspection observed, combined with boldness. For the want of the latter quality valuable opportunities may be missed. Mobile guns of long range will be of the greatest service in a pursuit, for if the force engaged in following up a retreating force has long-range guns, the enemy's rear guard must maintain a very large distance between itself and the main body in order to prevent the latter being fired on when in compact formation, or in column on a road.

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Orders regarding the Attack of a Position should contain

1. Information about the enemy and his position.
2. Intention of G.O.C.
3. Orders for cavalry (*e.g.* their disposition on the flanks, or orders for screening movements or opposing enterprises of enemy's cavalry, or for attacks on enemy's flank or rear).
4. Orders for artillery, their first position and target.

N.B.—The *exact* position of batteries should always be left to the O.C.R.A.

5. Orders for the infantry; distribution, front, objective, and line of attack, specifying which portion of the force is to make the *real* attack and which the holding attack and feint attack if any.
6. Orders for the general reserve, its composition and position.
7. Order for the engineers.
8. Order for the ammunition column.
9. Order for the field hospital.
10. Order for the baggage and supply columns.
11. Position of G.O.C.

It should not be attempted, in giving instructions, to go beyond what in all probability can be carried out. Each body of troops should be given a definite objective; and when this objective cannot be seen its compass bearing should be given.

The task required having been stated, the manner of carrying it out should be left to commanders of units. You would, however, as officer commanding, consider your arrangements for a pursuit, and at the same time you would decide on your line of retreat in case of defeat, and communicate it confidentially to a few senior officers.

Defensive Operations

Cavalry and Mounted Troops.—Previous to the enemy's attack, the cavalry would be engaged in reconnoitring well to the front and flanks to watch closely the enemy's movements and gain information regarding his intentions, as well as to prevent his gaining information regarding the strength and disposition of your troops. To delay the enemy's march, to prevent his

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reconnaissance of the main position, and to force an early deployment, the cavalry may well be supported by horse artillery and mounted infantry, who will fall back and temporarily hold points of vantage in front of the main position. At the commencement of an action, opportunities may occur for a successful attack on the assailant's guns, as they may be occupying forward positions, supported only by troops composing the advanced guard. The mounted troops would be subsequently withdrawn to a position sheltered as far as possible from fire, and when not required for the protection of special points on the flanks, their duties will be similar to those of mounted troops in the attack. They should always be on the look-out for opportunities for making small counter-attacks on the enemy's flanks when he is disorganised during his advance.

Artillery.—The artillery positions cannot be fixed till it has been decided where the infantry will be posted. Some of the guns will probably be massed, and thus allotted to different sections of the defence. Concealment of guns is all-important, and cover for gun detachments should be provided where desirable by means of gun-pits, epaulements, and covered ways.

The positions for the guns should admit of a heavy fire being brought to bear on probable hostile artillery positions, and should enfilade the main lines of approach, besides commanding the ground on and beyond the flanks. Dispersion of guns will generally be resorted to if the hostile artillery is in great preponderance, and this dispersion will often admit of a cross-fire being brought to bear on important points, but although guns may have to be dispersed, arrangements should be made by providing lateral communications, if non-existent, for reinforcing guns in one section of the defence from other sections where they are not so urgently required. Ranges should be taken to all likely places where the enemy's artillery may come into action, and to other conspicuous points. If desirable, batteries may be detached to a flank to guard special points, such as roads by which the enemy must approach, or ground over which he must advance to the attack, and of which better command can be obtained from the flanks than from a central position. They may also, at the commencement of an action, take up advanced positions, but should be protected by mounted troops, otherwise the enemy's cavalry may cut them off; or again they may be attached to mounted troops for offensive purposes during the action.

Any ground within effective infantry range which could give

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cover to the enemy should be occupied by infantry, if possible; in any case the latter arm should prevent hostile infantry establishing itself within 1500 yards of the guns.

If the defending artillery is being overwhelmed by the hostile artillery fire, it may be desirable for it to cease firing, and refit and come into action later on against the enemy's infantry, the gunners meanwhile being kept under cover.

The action of artillery in the defence may be divided to a greater or less extent into three phases, viz. :—

The preparatory action.

The main action.

The counter-attack.

The first may be said to cover all artillery operations up till the time when hostile infantry or mounted troops appear in large masses, or the infantry advances to the attack. At this period the main action as regards the guns begins, and they will direct all their fire on these masses above alluded to, or on the assaulting infantry, disregarding the hostile guns. Unless the defence is going to be of a purely passive nature, such as will generally be the case with a rear guard holding a position, sooner or later the commander of the troops on the defensive will order a counter-attack. In this case some of the guns at all events will actively co-operate.

Infantry and the Defence in general.—The troops defending a position, more especially the infantry, will be divided into two bodies; the first for the defence of the entrenchment, the second for the general reserve under the direction of the commander of the whole force. The first body will again be divided into a firing line (with supports if necessary) and into local reserves. In other words, the defending infantry, like attacking infantry, is divided into firing line, local reserves, and general reserves. As regards the relative strength of these bodies nothing definite can be laid down, except that the greater the number of troops held in general reserve, the more vigorous will be the counter-attack, and the greater the chance of victory.

It is particularly important under ordinary circumstances that the position selected should cover the line or lines of retreat, for if the principal line of retreat lies to one flank, or the position is not more or less at right angles to the hostile line of advance, it may be said to "form front to a flank," and will be consequently the harder to defend. Such a position in fact should never be selected unless some practically impassable obstacle protects the otherwise exposed flank, and a line of retreat can be secured

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which for some considerable distance is covered by, and is perpendicular to the position selected.

Considering how difficult frontal attacks have become, and how an attacking force is almost constrained to try and work round the defender's flanks, it is clear that the greater the extension combined with safety that a force occupying a position can take up, the greater are the difficulties thrown in the way of the attacking force, who may have to traverse several miles before the flank can be reached, thus enormously increasing the difficulties of control and combined action. It will be easily seen how great becomes the difficulty of working round the flanks of such an extended position.

Just as was formerly the case on the defensive, points affording a good field of fire can be lightly held by detached troops, either in front of or beyond the flanks, and the better the field of fire the more will the defenders be enabled (moving by night if necessary) to extend their line, change their front, or retire, in all cases causing great difficulties to the attackers.

The danger, however, of withdrawing too many troops from the centre to strengthen the flanks must not be forgotten. For a successful attack on the centre will be particularly disastrous to the defence, cutting as it does the defenders into two halves.

The position, needless to say, should be strongly entrenched, and both entrenchments and troops most carefully concealed from view. In making entrenchments, ground, when possible, should be selected where there are natural obstacles, and as ground whence the position might be enfiladed is especially dangerous, endeavour should be made to keep this under effective fire from the flanks.

Counter-attack is of supreme importance, unless a purely passive defence is being resorted to, and if a counter-attack can be developed so as to strike the flank of the assailant or threaten his retreat, the moral and physical effect will be all the greater. It will be of immense advantage if, in rear of the main position, and out of effective range from it, there is a second position, where, in case of retirement from the main position, the troops can rally.

It was said under the heading of the artillery in defensive operations how it will generally be necessary to divide up the position into sections for defence, sections being allotted to units. If, for instance, three brigades of infantry were available for the defence of a position, it might be well to assign one half the front to one brigade, and the other half to another

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brigade, the third brigade being in general reserve. The brigade commanders might still further subdivide the section allotted to them. Under normal circumstances such a force, not counting the brigade in general reserve, might occupy something like four miles of front, assuming each battalion is at full strength, and can therefore take up about half a mile of front. Except in the counter-charge, to be delivered only when magazine fire has failed to stop the assaulting infantry in their final charge, the firing-line should never quit their trenches. To do so is to indicate to the enemy their exact position, a point it is most important to conceal. Local counter-attacks should be made by the local reserves. Salient features, though they are on the whole a disadvantage to a position, as they can generally be enfiladed by the hostile artillery, nevertheless facilitate counter-attacks once an assailant has passed them. The decisive counter-attack generally rests with the main reserve.

The flanks should have troops, in the shape of local reserves, specially assigned to them so as to render them of greater strength, and good opportunities will probably occur for the action on the flanks for mounted troops. Their mobility should enable them to seize, and their training to fight on foot should enable them to hold important points, which will greatly delay, if not interfere with, the hostile turning movement. Reconnaissance and early information of such a movement will also be a very important part of their duty. Mounted troops may further be of great use in proceeding rapidly to any portion of a line which is threatened, and then by their dismounted fire aid the troops there stationed. The flanks, however, will generally be the best place for their employment, and will afford them even greater opportunities of useful action than they have hitherto enjoyed. In the occupation of advanced posts, too, there will be many occasions where they can render great service and considerably retard the hostile deployment.

Some portions of the defensive position, particularly those which have an excellent field of fire, and the approaches to which offer no cover for an assault, may be held by comparatively few troops, while other portions which are more vulnerable must be held in greater strength. It is not desirable to line all the trenches and the whole front of the position with troops till the general direction of the hostile advance has been ascertained. Troops once committed to their entrenchments cannot be quickly and easily withdrawn, and to do so under fire may entail unnecessary loss.

During the preliminary artillery bombardment, all troops except

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those employed in observation and reconnaissance should remain well under cover.

Chief Requisites of a Defensive Position

Officers are so very frequently asked in examinations to criticise a defensive position indicated on a map, and often, owing to the hurry and stress of an examination, omit to mention some highly important advantages or disadvantages, that I have decided to offer to those who like to use such aids to memory, a *memoria technica* which includes all the points mentioned as the chief requisites of a position in *Combined Training*, section 24. The *memoria technica* in question is "Defence of Post."

D desired strategical object fulfilled.
E extent of position suitable to force.
F flanks strong, naturally or artificially.
E enough depth and lateral communication.
N natural cover good.
C clear field of fire.
E enemy's artillery positions unfavourable.

O own artillery positions good.
F facilities for counter-attack.

P passages to rear, *i.e.* retreat.
O obstacle to assault on flank nearest enemy, if position
S sufficient water. [parallel to his advance.
T tactical facilities for rallying in rear of position.

If time permits, in taking up a defensive position, either on the ground or on a map, it is always well, after carefully considering the position from the defender's point of view, to place yourself in the position of the attackers and observe—(1) How you would, in his place, attack the position. (2) Whether he has good artillery positions. (3) What sort of cover he has, and whether troops can be manœuvred unseen. (4) Whether there are any good defensive positions where he can resist a counter-attack.

Orders regarding the Occupation of a Defensive Position should contain

1. Intelligence of the enemy and position of other portions of own forces.

2. Intention of G.O.C., including site and extent of position, &c.

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3. Orders to cavalry.

4. Orders for the advanced guard or rear guard (if any) and for the outposts.

5. Orders for the R.A., and their approximate position.

6. General distribution of the infantry and position of the general reserve.

7. Orders for the R.E.

8. Orders for strengthening the position, occupation of advanced posts, &c.

9. Orders for medical arrangements.

10. Orders for the ammunition columns, baggage, and train.

11. Any special orders regarding mounted infantry, signallers, machine guns, rations, &c.

12. Position of G.O.C.

N.B.—Lines of retreat in case of defeat would be arranged for and confidentially communicated.

Retreat

In the event of a withdrawal from a position being deemed necessary, a rear guard must be formed of the freshest troops, who must endeavour to hold on, deceiving the enemy as to their strength till the main body has had time to get clear. From this point on, the movement will be conducted in all probability on lines similar to those already suggested for rear guards. If a position is skilfully evacuated, it may be difficult for the assailants to recognise that a retirement is in progress, and the main body withdrawing will thus often gain a very considerable start. To effect a retirement if a position has been captured or a defeat sustained, great loss and disorder must ensue, but if careful preparations for such an eventuality have been made, the bad effects may be diminished to some extent.

Such preparations will include the communication confidentially to senior officers concerned of the line of retreat, the careful selection of a rallying or second position, the sending on in advance of all baggage and impedimenta, and above all the holding of positions or heights on the flanks, to prevent mounted troops and horse artillery intervening between the rear guard and the main body.

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CHAPTER VIII

NIGHT OPERATIONS

NIGHT marches would be undertaken to seize a position, before the enemy could reach it, to gain time either in the advance or the retreat, or to move troops into position under cover of darkness previous to an assault. In an undulating and roadless country it is not safe to expect a large force to make good more than one mile per hour, or two miles an hour on roads.

Night operations may further be necessary when in contact with or close proximity to an enemy in order to seize some position by a *coup de main* in the dark or early dawn, which it would be difficult to capture under fire by day, or again to move troops from one part of a position to strengthen another part and thus surprise an enemy, or to threaten his line of retreat.

As a rule all operations by night which entail fighting, would be so timed that the actual assault should take place at dawn, but in certain cases, small parties more especially might attack some advanced outpost, or advanced works or trenches, or any post where there is reason to believe that the defenders are not vigilant, and do so actually in the dark. Attacks by night with large bodies are seldom expedient, but on the other hand movements in the dark with a view to attack at the first break of day are often a necessity. Night marches undertaken without any idea of fighting in the dark, but merely to place the troops in a favourable position for attack at daybreak, may frequently form an effective method of outflanking a position.

A reconnaissance should always precede night operations, and the officers responsible for guiding the force should traverse the ground or roads both by day and night. In the event of an attack on a position being contemplated, whether to be carried out either in the dark or at break of day, the reconnaissance should embrace :—

First. The approaches to the enemy's line of outposts, the position of his sentry line, piquets, supports, and their strength.

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Second. The roads leading from the enemy's outposts to his position, the obstacles, natural or otherwise, which lie in front of it, and the nature of the position.

Third. The choice of the best route to avoid the enemy's outposts as much as possible. It should be carefully studied at night, all turnings noted, and the points where mistakes may probably be made should receive special attention.

All information having been received from a reconnaissance, the commander settles his plan of attack. As few columns as possible should be formed, in order to ensure simplicity. Cavalry, artillery, and mounted infantry should be separated from, and be well in rear of, the infantry. The bayonet is the weapon in a night attack, and the infantry therefore will alone be used in the assault—the mounted troops and artillery being used at daybreak. Supports and reserves should be employed, but they should not be too close to the attacking columns. Columns should keep in communication as long as possible. Guides of the country, if friendly, may be employed, but *till the movement has actually begun* they should not be told to which points they are required to guide the column, or if told anything, should be given wrong information. Positions of assembly, that is, the points where the troops are to form up when the night march formation can no longer be maintained, must be previously selected, and again positions of deployment, within at least 1000 yards of the points selected for assault, must be clearly defined, and compass bearings should have been previously taken to both of them, and the distance between them determined occasionally, especially if the country is open and level. The position of assembly and position of deployment may be one and the same. Two points to be noted during the advance are: (1) To keep the enemy in ignorance of your movements. (2) To maintain the right direction, and where no roads exist this must be done by compass bearing.

Formation of a Column.—Each column in open country should be preceded at about 100 to 200 yards from its advanced guard by an officer with a compass, and by some men at short distances to keep touch with the column. Another officer measures or checks the distance marched. The advance guard need only be small, and should, followed by connecting files, move close to the main body, so as not to lose touch with it, and only

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sufficiently far off to prevent its being taken by surprise. It may have pioneers and materials for clearing obstacles. The main column will move well closed up, and the reserve will follow at about 400 yards in rear of the main column. Gun detachments may accompany this reserve (to serve the enemy's guns, if any are captured), also a detachment of engineers. The general reserve will be about half a mile in rear of the local reserve, artillery, in rear of reserve, with the reserve ammunition and mounted troops. Machine guns, ammunition mules, first-line transport of all the troops in front, and all vehicles will move in rear of the general reserve. The order or formation indicated above is that in which the column or columns will usually make their attack on the position; and if this order has not been adopted on the march, it will be necessary to assume it on arrival at the position of assembly. If there are two or more columns, endeavour should be made to deliver the attack simultaneously. As the position is approached, the advanced guard will close and await the main body; the exact moment for attack will depend upon the alertness, or otherwise, of the enemy's outposts, who should, if possible, be surprised and overpowered.

There should be no firing, only the bayonet being used. If the attack is repulsed, the attacking column should retire round the flanks of the supports, so as to leave its front clear.

Orders regarding Night Operations should contain

1. Information regarding the enemy and other portions of own forces, and topography of country.
2. Intention of the G.O.C.
3. The position and hour of assembly, and time of departure from it.
4. The order of march, distances, and intervals between units and how communication is to be kept up.
5. Compass-bearing and distance to position of deployment.
6. Time and duration of halts.
7. Position of deployment. Description. Its distance from position of assembly and point of attack.
8. Formation to be adopted at position of deployment.
9. Special instructions for the assault and the signal for it.
10. Steps to be taken in case of sudden attack, either on the front or flanks.
11. Special instructions regarding no loading without orders;

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use of bayonet only, to daylight; absolute silence; passage of obstacles, &c.

12. Orders regarding watchword and distinctive marks.

13. Position of the commander at position of assembly, on the march, and at the position of deployment.

Arrangements for Defence of a Position at Night when an Attack is expected

Arrangements would be made similarly for an expected attack by day, the following additional precautions being taken:—

1. Frequent patrolling from the outposts.
2. The front should be cleared up to at least 300 yards, obstacles placed, and mechanical arrangements made for laying guns, &c.
3. Machine guns should be laid on any particular points the enemy is likely to advance by.
4. The position should be divided into sections, which must each act independently with its own reserve, while a general reserve should be formed to the whole.

In the event of the enemy assaulting at night, the artillery would open fire with case, infantry would fire volleys only, the fire being directed on a particular point, which should be lighted up by fire-balls, if available. If the enemy penetrates the position, the firing line must charge, the sectional reserve replacing them. The general reserve will be ready to move where ordered.

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CHAPTER IX

MISCELLANEOUS

Savage Warfare

SAVAGE warfare differs very widely from civilised warfare, and every uncivilised foe has its own peculiar method of fighting; but in nearly all cases an uncivilised foe, though in many cases he has a line of retreat to some capital, village, or stronghold, which he may wish to cover, is, nevertheless, unhampered by a line of communications, and is therefore able to attack from any direction, and also to make the protection of the line of communications of a European force a much more difficult matter than would otherwise be the case. On the other hand, apart from the fact that an uncivilised foe will have little or no artillery and indifferent weapons, neither in attack or defence has he, *as a rule*, any general reserve; so that if his first line is defeated, a total rout will ensue. Operations against N.W. Frontier tribesmen in India present so many peculiar features that they are separately treated of in an appendix to Sherston's *Tactics applied to Schemes* (Thacker, Spink & Co.). The question of the best tactics to adopt is first discussed, and then some schemes which have been set in an examination are worked out on the maps. The following paragraphs refer to savage warfare as distinct from N.W. Frontier warfare.

In nearly all cases the moral effect of a rapid and vigorous offensive against an uncivilised foe is enormous, and much bolder measures may often be resorted to than would be possible when acting against a European force.

Against all uncivilised nations, the main point to provide against is surprise.

Outposts must therefore be even more vigilant. Their front must not be extended. Sentries must be posted much closer than ordinarily to their piquets; or it may be desirable to employ a system of "groups," with, however, double sentries always at night. Piquet posts, also small isolated posts or bivouacs, should

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be protected by obstacles, for which any material at hand can be used that will impede, disconcert, and not give cover to the enemy. The posts should also be fortified or "sangared."

In certain cases the sentries must be actually within the zareba or defensible enclosure surrounding the troops.

Infantry.—It is generally best, if possible, to attack uncivilised troops at dawn, after a night march. Their position should be assaulted unawares, and simultaneously in front and on a flank. Formations should be such as to ensure the most efficient fire being brought to bear on the enemy; while at the same time they should be such as to withstand the rush of masses of brave but badly-armed men. Fire should always be kept well in hand, especially at night, when volleys only should be allowed. The usual formations on level ground against shock tactics are either square or echelon, the best being that which will compel the enemy to attack on as narrow and deep a front as possible, and so give the greatest effect to the close and intense fire which can be delivered by modern arms.

Mounted Infantry should always form part of a force engaged in operations against uncivilised troops if the country is suitable for their movement. While their mobility enables them to ascertain the whereabouts of the enemy and to get round on his flanks, a manœuvre calculated to strike terror into most savage troops, and to have, if nothing else, an excellent moral effect, they are able to offer a resistance which is, in itself, sufficient to cope with troops indifferently armed. They would also be employed, when it is required to make a forced march, to seize a certain point or destroy a stronghold; also in pursuit, where, in a close country, cavalry could not easily be employed.

Machine Guns will be of great use. They are mobile, take up little space, and can pour in a rapid and continuous fire.

Artillery.—In most countries where the roads are not suitable for the transport of wheeled artillery, and where your enemy is armed only, if at all, with a very inferior weapon, mountain guns are the best to employ. Where square formation is adopted for infantry, it will be better probably to mass the guns outside the square rather than to use them singly, or in pairs, at the angles of the square.

Cavalry are best used as scouts to prevent infantry from being surprised; when the attack develops, they will retire until an opportunity for pursuit offers. Their utility will depend greatly on the nature of the country where operations are undertaken.

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Machine Guns

The advantages of machine guns are—

1. They take up little space and have no recoil.
2. They present but a small obstacle to an advance when in position.
3. They can be traversed when firing.
4. They are lightly equipped, therefore very mobile.
5. Their fire is so completely under control that it can be "switched" suddenly on to a spot, and as suddenly directed to another point.

The disadvantages are—That compared with artillery their range is very limited. If seen, they can be easily silenced by artillery from long ranges.

As regards their position in the attack, they are best placed on commanding positions, too small to occupy with artillery, and as near to the enemy's position as safety will permit, on his front or flanks, and in such a position that his cavalry cannot reach them. If no such positions exist they should assist the firing line in its advance by their fire from positions in rear, without as a rule actually advancing with the firing line unless broken ground or hedges enable them to approach unseen. On the flanks they will be especially useful, so as to enfilade his line, or to bring fire to bear on a counter-attack. In a defensive position they would be used to sweep the approaches leading into the position, to defend an exposed flank, to fire on obstacles to prevent their removal, and to flank by their fire salients. It is more important to ensure their protection from artillery fire than to get a more extended field of fire.

They should be as near the enemy as is compatible with safety, either in front or on the flanks, and out of reach of the enemy's cavalry. They would usually be employed on outpost or other detached duties, in support of cavalry, when they should be pushed well forward and continue firing until masked by the cavalry. They are also of use for the protection of bivouacs and camps. During a retreat their defensive action is of great assistance to cavalry. They further assist cavalry in seizing or reconnoitring a position by the support they afford, and help to make up for the absence of infantry by saving cavalry dismounted fire. Machine guns acting with infantry should generally be used singly, and it is well to provide alternative positions or emplacements, so that they may be withdrawn from the first

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position if the artillery fire is too severe, and come into action from the previously prepared site.

Raids and Surprises

They are usually carried out by small bodies of cavalry (one or two squadrons). The instructions given are similar to those for contact squadrons, viz. to carry out some special object, such as interception of telegraphs, seizure or destruction of a bridge, reconnaissance of a particular detachment of the enemy, &c.

The main point is to appear unexpectedly and to disappear rapidly.

The best time to carry out a raid or surprise is to arrive in the neighbourhood of the objective towards evening, make a reconnaissance during the night, and carry out the surprise about daybreak; though, if the enemy is alert, it would be better done after his morning patrols have returned.

Conditions for success necessary are—(1) To approach undetected as close as possible; therefore, if feasible, long détours should be made to the side from which attack is least expected. (2) The order of march should be as concentrated as possible, no noise and no rattling of arms. (3) An attack should be made vigorously and quickly. (4) All dispositions should be made clear to every one beforehand, and certain signals arranged.

Part of the force should form a reserve, the remainder attacking from one or more sides; the latter, however, entails greater risk of premature discovery, unless each column attacks simultaneously. The leader should remain with the reserve, to use it as he thinks best. The line of retreat must be arranged, and a rallying point determined on the general line of retreat; it should not be too close to the scene of action, and should be behind a natural obstacle. If directed against a line of outposts, the piquets should be attacked direct, and no notice taken of the sentries; there should be no firing.

If directed against a bivouac or billet, first cut down the sentries, buglers, &c., overpower the guard, and occupy the alarm post. In the case of cavalry, cut the piquet ropes. If successful, return as quickly as possible, but not in too concentrated a formation, and take every precaution against surprise. Ambushes are best selected on the enemy's flank, and, if possible, close to a defile, and on ground cavalry (if acting alone) can manœuvre over. The dispositions for raids apply equally to ambushes. In attacking a railway station, it is well before the attack is delivered,

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or absolutely simultaneously with the attack, to cut the telegraph wires up and down the line, that is, on both sides of the station. This precaution prevents the defenders or station staff telegraphing for assistance, which might arrive in the shape of an armoured train.

Requisitioning

In an unfriendly country, you must arrive unexpectedly, occupy all the outlets to the place, to prevent supplies being removed, and information carried to the enemy. Hostages should be taken, supplies demanded, sentries posted where these are known to be stored, and post-offices seized. The main part of the force will take up a suitable position in the direction of the enemy, posting vedettes and sending out patrols. The return should be made by a different road.

Bivouacs

The selection of a site is dependent upon two conditions—(1) military conditions, (2) sanitary requirements. In close proximity to the enemy, the latter must give way to the former.

Military conditions require—(1) That the troops should be near the position they have to fight on. (2) That the communications to it from the position should be good. (3) That each portion of a force should be bivouacked in rear of that part of the position told off to it. (4) That the bivouac should be, if possible, concealed from the enemy's view. (5) That guns should not be so placed as to be difficult to withdraw.

Sanitary conditions require—(1) Natural drainage. (2) Gentle slopes. (3) Protection from wind. (4) Good water, wood, and straw supply.

Distribution in Bivouac.—Infantry should be in front of cavalry, artillery close to either, *i.e.* the different arms should be bivouacked generally in the order in which they would be disposed in the position, and should front parallel to the same. If, however, there is any possibility of a night attack, infantry should cover the other arms both on the front and flanks.

Convoys

A convoy should not, if it can be avoided, be more than one mile in length.

If composed of wheeled and packed transport, the wheeled transport should precede.

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The escort should be composed of infantry with sufficient cavalry or mounted infantry for extensive reconnoitring to the front and flanks; guns generally should be added.

Disposition of the Escort.—There should be an advanced guard, moving a considerable distance ahead, rear guard, and flanking parties. A small party immediately at the head and rear, the remainder moving concentrated about the centre, ready to move to the points threatened. If, however, the country is enclosed, the main body would move at the head or rear, according to the direction from which attack is expected.

If sufficient warning is given before an attack and the enemy is in force, the convoy should be parked; if, on the other hand, the enemy is weak, the convoy should continue to move on, while the escort engages and beats off the enemy.

In an open country, the most vulnerable part of a convoy is its flanks; in a close country, its extremities; the main body of the escort would be posted accordingly.

The tactical arrangements should be such that, in case of attack, the engagement shall take place at some distance from the convoy.

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CHAPTER X

RECONNAISSANCE

RECONNOITRING parties are moving detachments sent out in order to gain information with regard to the enemy, the ground, and moves of other bodies of one's own troops. They seldom fight unless it is absolutely necessary to get information which cannot otherwise be obtained, or unless it is desired to capture a prisoner to obtain information from him, or again if there be a weakly guarded point which it is wished to break through. They are usually sent out with a view to getting information about an enemy, upon which, when obtained, the movement of their main force will probably depend. They move as an advanced guard on a small scale, providing for the security of their own front and flanks.

When in command of a mixed reconnaissance with a specific object, composed of cavalry and infantry, it should be noted that in an ordinary open country, where cavalry can act, it is unnecessary to take your infantry the whole way; all work of observation can be much more quickly and more thoroughly done by cavalry, while the infantry may be of use to support them and to ensure their safe withdrawal by taking up a position in any convenient place in rear, whence they can cover their retreat and prevent their being cut off or pursued by hostile cavalry.

N.B.—In questions that involve the description of a certain mission, such as a reconnaissance, place yourself in the position of the officer commanding, stating what orders you give your party. In describing the movements of your party, remember that you, as officer commanding, cannot be in two places at once, and that it takes time to receive reports, as well as to issue fresh orders with regard to any new dispositions you may wish to make, in consequence of information received from your patrols as to the enemy's movements.

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Cavalry Reconnaissance

This may be divided into four parts :—

First. *Reconnaissance in force*, a term which explains itself.

Secondly. *Advanced Reconnaissance.*

Thirdly. *Reconnaissance for attack.*

Fourthly. *Protective Reconnaissance.*

Till touch with the enemy has been established the second and fourth are necessary, viz. advanced reconnaissance for gaining information, and protective reconnaissance to prevent the enemy from finding out one's own strength and dispositions, and to provide security against surprise or unexpected attacks.

Advanced reconnaissance is carried out by a force of cavalry, varying from a regiment to a brigade or more, according to the circumstances of the case, and the troops available. There is practically no difference between the formations of a cavalry regiment and of a brigade covering an army. There is, however, a difference between the ground they can cover laterally and the distance they would be ahead of the main army.

A cavalry regiment might be about a day's march ahead of the main army, to whom, if driven in, it would look for support, while a large force of independent cavalry might be thirty or forty miles ahead of it, being self-supporting and moving as an independent body. They must both fulfil the following requirements, viz. discovering the enemy, and when he is discovered, not losing touch with him. This is done by small bodies, from which scouts are sent out, keeping within easy communicating distance of the patrols they are covering; these in turn must be followed by stronger bodies (advanced squadrons), at such a distance in rear as to be able to render them sufficient support to carry out the task allotted to them; they must, in addition, be so situated as to be able to concentrate with rapidity; while a good system of intercommunication between the whole must be organised by means of connecting and communicating posts. In addition to these advanced squadrons, in the case of a large force, there would be a reserve to the whole.

A particular zone might be apportioned to the force according to its strength. Its business will be either to see that this zone is clear of the enemy or to furnish information about the enemy, supposing he is in it.

Connecting Posts are employed to keep up communication between detached bodies of cavalry and the force in their rear.

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Strength: about one section, one man of which is always in readiness to convey messages.

Communicating Posts are employed to keep up communications laterally between bodies of cavalry, when detached for reconnaissance, or between parallel columns on the march. Strength: about three men, but mutual communication can often be arranged for squadrons by lateral roads, each squadron sending half-way to meet men sent by the other squadron.

Cyclists may often be usefully employed on connecting and communicating posts.

Contact Squadrons, Troops, or Patrols

They are independent of the main body. The rôle of a contact squadron is suggested by its name, viz.—(1) To act independently, in order to establish and maintain contact with the enemy, generally with a particular body of the enemy, either in front or flank. (2) To undertake special missions, such as the seizure of a village or tactical point, destruction of a bridge or railway, or the capture of prisoners, waggons, &c. The work devolving on them would usually occur when the enemy is within striking distance. More than one contact unit may be employed on the same mission, operating from different quarters, and assisting each other if they meet. When contact units have once received their orders, they act absolutely independently of the main body, and their movements depend upon those of the enemy and not on those of their own force. They send out their own patrols and scouts, to whom they act as supports. When halted, they must take all precautions for their own safety, by throwing out outposts and by using all necessary measures to ensure secrecy and immunity from surprise.

Officers' patrols are any patrols commanded by an officer, but their duties are similar to those of a contact squadron; they would also, during a general action, be sent well to the flanks, and, if possible, to the rear of the enemy, in order to gain what information they can regarding his intentions. Officers' patrols would vary in strength from two to three individuals, or two officers alone to perhaps complete squadrons.

Reconnaissance of an Enemy's Position is of Two Kinds

1. Reconnaissance in force.
2. By officers' reconnoitring patrols.

With reference to the former, it must be of sufficient strength

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to gain the object in view; while in the latter, they would try to get as close to the position as possible unobserved, then act quickly and with determination, either retiring directly they have gained their object, or sending back information and remaining in touch.

Points to be noted are: The general line of the enemy's front; the decisive points in his position. The estimated strength and how posted. Whether the position is entrenched. The best line of approach for a direct attack, and most suitable artillery positions. How his flanks are posted. If reserves are visible. His probable line of retreat.

Reports connected with Reconnaissances

1. Place, date, hour, minute, and signature should be given.

2. They should be legibly written, and names of people and places should be printed.

3. They should be concise and clear, of the style usually used in telegrams. It should be distinctly stated whether the information is from personal observation or from report; if from the latter, what the source is and whether reliable. The commander should also convince himself, from personal observation, of the correctness of the report; if this is impossible, he should, if possible, send the observer with the report.

4. All vague terms must be avoided, *i.e.* points of the compass should be referred to—right or left bank of a stream. Estimated strength of the enemy, and time taken in passing certain points, is important. If information supplied by another is given, the authority should be mentioned.

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CHAPTER XI

FIELD FORTIFICATION

No work on modern tactics could now be complete without some reference, however small, to artificial cover.

All modern warfare tends to show the extreme importance of this, not only, as was formerly the case, in the defence, but also in the attack.

It has been pointed out that in the attack one portion of the force will probably act as a "containing force," while another portion works round a flank. This containing force, while strategically on the offensive, is tactically on the defensive; and this being so, if good natural cover does not exist, it must be supplemented by artificial cover. The nature of this will depend entirely on the country. In certain cases, as in South Africa, or on the North-West Frontier of India, boulders are generally obtainable, by which effective cover is procurable in the minimum of time. If no such boulders or stones exist, positions must be entrenched, and very possibly, under cover of darkness, still further strengthened.

It is not only the containing force in the attack which may have to entrench, but those isolated portions which may have, so to speak, wedged themselves forward on to some position, which it is most important to hold till the remainder of the line work up level with them, must also entrench themselves. Here again artificial cover, not only from direct, but from enfilade fire, will be of the highest importance.

If then cover is of such great value to the attack, how much more is it so to the defence? Every war of late years, and more especially the Boer War, has shown that the advantages which lie in skilfully preparing any position, great or small, for defence, by means of artificial cover, can hardly be over-estimated. The great point seems to be that, wherever the ground can be artificially strengthened, more especially on the flanks and where it is naturally weak, it should be done. Regarding the details of the artificial cover created, which is more the subject for a book on fortification than on tactics, it will be sufficient to remark that,

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owing to smokeless gunpowder, the concealment of trenches and works, &c., is of the highest importance.

We have learnt many lessons from the Boers, but perhaps none of greater value than the necessity of concealing the site of one's firing line and guns, and thus offering the minimum target to the enemy. Instead, too, of building long lengths of shelter trenches, into which if a shell dropped great damage might be caused, the Boers adopted short lengths of trenches, and made ample traverses, so as to secure themselves against enfilade fire and to localise the effect of bursting shells.

Although great advantages can be gained by occupying a forward position for shelter trenches rather than one on the sky line, the difficulty always holds good as regards reinforcing or retiring from such a position. Overhead cover is of great importance if it can be created, but timber or galvanised iron sheets are not always or even generally available for this purpose, and the soil will seldom permit of bottle-shaped trenches being constructed, such as were made by the Boers. Deep narrow trenches are the best method of obtaining cover under ordinary conditions, and their existence can be concealed by spreading out the excavated earth in hollows and other points concealed from view.

The subject of Military Engineering or Field Fortification is so closely bound up with that of Tactics, that it may be as well to touch briefly on some of the details in military engineering which most frequently occur in connection with tactical problems. These are:—

(1) Earthworks, *e.g.* fire and cover trenches.
(2) ,, ,, ,, gun epaulements.
(3) Clearance of copses.
(4) ,, of woods.
(5) ,, of hedges.
(6) Obstacles: low wire entanglement.
(7) ,, high ,, ,,
(8) ,, abatis.
(9) Loopholing walls.
(10) Notching ,,
(11) Demolition of bridges.

For all the work in the above list there are certain data given in the *Manual Military Engineering* or in *Instruction in Military Engineering, Part I., Field Defences*; and by these data, at all events, an approximate idea of the men, time, tools, and materials required for the work can be gained.

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There are, on the other hand, many details and much work in connection with field fortification for which no exact estimate of men, time, or tools can be given, more especially when the estimate has to be made out from a map.

Such work, for which no tolerably approximate estimate can be given, is :—

(1) Barricading roads and streets.
(2) Improving hedgerows for defence.
(3) Damming bridges to form inundations.
(4) Preparing buildings for defence.
(5) Making head cover and overhead cover.

All the above are clearly dependent on so many details which the map cannot show, that a reasonable number of men, time, and tools must be apportioned for the job, and I shall therefore only deal with those tasks for which fairly exact calculations can be made.

Before entering for an examination in *d* (i.) in which tactics and military engineering are combined, a candidate should know all the data which follow, and which are given in italics for more ready reference ; and first of all he should know the tools which an infantry battalion and a field company of engineers carry on service. (Vide *M.M.E.*, sec. i.)

The tools are :—

	Field Co. R.E.	Infantry Battalion.
Spades or shovels, G.S.	128	300
Pickaxes	75	159
Intrenching shovels	...	256
Intrenching picks	...	128
Felling axes	43	29
Hand axes	26	17
Bill-hooks	47	50
Crowbars	10	12

Every wagon also carries one large shovel, spade, and pickaxe, and one felling axe, and a bill-hook.

It should further be remembered that cavalry pioneers carry 135 *pounds, and a field company R.E.* 420 *pounds gun-cotton.*

The following details should also be remembered :—

(1) *Four hours is the best length of task for infantry*, i.e. *that length of task should not be exceeded.* (*M.M.E.*, sec. iv.)

(2) *For all excavation work a reserve of one-tenth more men*

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than the initial necessary number should be detailed. (*M.M.E.*, sec. iv.)

(3) *If tools are limited, but there are ample men, two men can be told off to each set of tools, and so either one-third more work done, or the work completed in one-third less time.* (*M.M.E.*, sec. iv.)

(4) *For each man in excavation work a pick and a shovel are required.* (*M.M.E.*, sec. iv.)

(5) *Men should never work closer than* 4 *feet apart, and, ordinarily speaking, not wider than* 10 *feet.* (*M.M.E.*, sec. iv.)

(6) *With large tools—i.e. spades or shovels G.S. and picks to correspond—an infantry man in ordinary soil should excavate* 80 *cubic feet in* 4 *hours, but, with intrenching picks and shovels,* 45 *cubic feet is the most which can be expected. Increase the amount for very easy soil, and very largely decrease it for difficult soil.* (*M.M.E.*, sec. iv.)

It is next well to note that if, for instance, a trench 3 feet wide by 3 feet deep is required, the area of the trench being therefore 9 square feet, and that if a man can excavate 80 cubic feet, then

$$\frac{80 \text{ cubic feet}}{9 \text{ square feet}} = \text{nearly } 9 \text{ linear feet.}$$

In other words, area of task, divided into cubic contents which a man should excavate, will give the length of his task.

If he can only excavate 45 cubic feet in the time allotted, and the area of the trench required is again 9 square feet, then

$$\frac{45 \text{ cubic feet}}{9 \text{ square feet}} = 5 \text{ linear feet.}$$

So that a man can only dig 5 feet in length of this trench with small tools instead of nearly 9 feet when he had big tools.

Examples

1. Earthworks, *e.g.* Fire and Cover Trenches

In front of your position you wish to make shelter trenches, total length 300 yards, in three separate lengths of 100 yards each, 4 hours available. Tools of one battalion infantry.

I decide on making my first portion of trench 3 feet wide by 3 feet deep, with parapet $1\frac{1}{2}$ feet high for men to fire standing.

The area of the trench is 9 square feet, and, with large tools,

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each man in four hours—the time available for work—can excavate 80 cubic feet; but as the soil is only moderately easy, I allow 63 cubic feet as each man's task.

$$\therefore \quad \frac{63 \text{ cubic feet}}{9 \text{ square feet}} = 7 \text{ linear feet},$$

i.e. 7 linear feet is the extent of each man's task, and 100 yards or 300 feet is required in the first length.

$$\frac{300 \text{ feet}}{7 \text{ feet}} = 43 \text{ men.}$$

Say 47 men, allowing for a reserve.

The next length of 100 yards is ordinary soil, so each man can dig 80 cubic feet. I want a trench of the same area as before, so

$$\frac{80 \text{ cubic feet}}{9 \text{ square feet}} = 9 \text{ linear feet},$$

as length of each man's task. (It is not worth while to take less than a round number in feet.)

$$\frac{100 \text{ yards or } 300 \text{ feet}}{9 \text{ feet}} = 33 \text{ men.}$$

Say 37 men, allowing for a reserve.

The last 100 yards of trench required is on the side of a slope, and will be $4\frac{1}{2}$ feet deep in front, 3 feet wide, and $5\frac{1}{2}$ feet deep in rear. The area is therefore 15 square feet.

If soil is ordinary, each man can dig 80 cubic feet, but the earth in this case is not to be made into a parapet but scattered, so assume 75 cubic feet for each man's task.

$$\frac{75 \text{ cubic feet}}{15 \text{ square feet}} = 5 \text{ linear feet};$$

and as 100 yards or 300 feet are wanted, $\frac{300}{5} = 60$ men. Say 66 men.

My three working parties are 47, 37, and 66 men, total 150 men, who will require about 150 large picks and 150 large shovels.

It will be noticed, however, that a battalion of infantry carries only 128 picks, so I am *about* 20 picks short of the required number.

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These I must either borrow from the R.E. Field Company, or I must "double man" each set of tools in the last task, or, what is still simpler, use intrenching picks and shovels for part of the second task.

This task was on ordinary soil, and required, including a reserve, 37 men with large tools; but I can now use only 17 men with large tools, as I am 20 large picks *short*.

15 men (2 additional men being in reserve) dig each 9 feet or 3 yards, total 45 yards, and 55 yards remain to be done.

With intrenching picks and shovels, one man can only dig 45 cubic feet, and as area of trench is 9 square feet,

$$\frac{45 \text{ cubic feet}}{9 \text{ square feet}} = 5 \text{ linear feet.}$$

5 linear feet therefore is the length of each man's task, and as 55 yards are required,

$$\frac{55 \times 3 \text{ feet}}{5 \text{ feet}} = 33 \text{ men.} \quad \text{Say } 37 \text{ men.}$$

17 men more than the number originally estimated are wanted, and 37 intrenching picks and 37 intrenching shovels will be required.

If these lengths of trenches are liable to enfilade, it will be well to erect traverses at intervals, and head cover must also not be neglected.

2. Gun Epaulements

The type of gun epaulement given in *Manual Military Engineering*, 1903, differs from that given in *Instruction in Military Engineering, Part I.*, 1902; and *Field Artillery Training*, again, gives a plan of an epaulement which differs from both the engineering books above mentioned.

The type given in *Instruction in Military Engineering*, however, agrees with that given in *Field Artillery Training*, in so far that both say that 8 men can make the epaulement in about 2 hours.

The former of these two books gives an improved form of epaulement which takes 8 men an extra two hours, or four hours in all.

If, therefore, 8 men can make one gun epaulement in 2 hours, or the improved type in 4 hours, 8 × 6 or 48 men can make 6 epaulements in 2 or 4 hours, as the case may be; or say 53 men, allowing for a reserve.

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About 50 picks and 50 shovels large size, or G.S. pattern, will be required.

A battery carries only 24 spades and 12 picks, so that the necessary tools to complete must be borrowed from another corps.

For profile and plan, vide *Instruction in Military Engineering, Part I. Plate xvii.*

3. Clearance of Copses or Brushwood

One man can clear 100 *square yards in* 4 *hours* (*M.M.E.*, sec. v.).

For every 50 *men,* 50 *bill-hooks, and if possible* 50 *pairs hedgers' gloves, are required, besides a few felling and hand axes, if occasional trees are met with—say* 2 *felling axes and* 4 *hand axes, with perhaps* 2 *grindstones and* 5 *whetstones for sharpening tools.*

EXAMPLE.—A copse is 300 yards long by 200 yards broad, consisting of brushwood with an occasional small tree. How many men could clear it in 4 hours?

One man can clear 100 square yards in 4 hours. Therefore

$$\frac{300 \times 200}{100} = 600 \text{ men},$$

with 600 bill-hooks, 25 felling axes, 50 hand axes, and, if procurable, 600 pairs hedgers' gloves, 25 grindstones, and 50 whetstones.

Infantry could do the cutting, but for sharpening tools sappers will probably be necessary—say 40 sappers.

It is unlikely all the necessary gloves, whetstones, &c., will be available in the field, or so many sappers. Gloves may be dispensed with, and the difficulty about sharpening tools can be got over by drawing extra bill-hooks, say 10 per cent. extra. If, however, the work were done in 3 reliefs, 12 hours being available, then 200 bill-hooks would be enough.

4. Clearance of Woods: First Method of Calculation

If trees do not exceed one foot in diameter, one man with a felling axe should cut them down at the rate of one minute for every inch of diameter; soft-wood trees in one-third to half the time.

Trees which are larger than one foot in diameter will take much longer, and the time will vary as the cube of the diameter

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(*M.M.E.*, sec. v.). Skilled labour is, however, necessary for felling large trees, and infantry would seldom be employed except in felling trees not exceeding about one foot in diameter.

EXAMPLE.—A small wood, containing some 200 trees about one foot in diameter on the average, requires cutting down. How many men could do it in 4 hours?

One man can cut down a tree one foot or 12 inches in diameter in 12 minutes, say 5 trees in one hour, and as he will easily tire, say 10 trees in 4 hours.

$$\frac{200}{10} = 20 \text{ men with } 20 \text{ felling axes.}$$

Clearance of Fir Woods: Second Method of Calculation

A trained sapper can clear about 250 *square yards of fir plantation, trees not exceeding about* 12 *inches in diameter, in about* 10 *hours.*

Vide *Instruction in Military Engineering*, Part I. sec. v.

If a trained sapper could clear 250 *square yards in* 10 *hours, an infantry man might perhaps clear* 100 *square yards in* 4 *hours.*

EXAMPLE.—A fir wood, trees not exceeding about one foot in diameter, 150 yards long by 100 yards broad, is to be cut down. Time available, 8 hours. How many men and what tools will be necessary?

If one infantry man can clear 100 square yards in 4 hours, then

$$\frac{150 \times 100}{100} = 150 \text{ men,}$$

but as 8 hours are available, 75 men in first relief and 75 men in second relief, with 75 felling axes, or 60 felling axes and 15 hand axes and 3 grindstones.

A few extra tools, say 80 felling axes, or 63 felling axes and 17 hand axes in all, would be desirable.

5. Clearance of Hedges

One man can cut down 5 *feet of hedge, wood varying from* $\frac{1}{2}$ *to* $2\frac{1}{2}$ *inches in diameter, in from* 6 *to* 18 *minutes.*

N.B.—Hedges parallel to the front, as a rule, more frequently require clearing than those perpendicular to the front. Vide *M.M.E.*, sec. vii.

For practical purposes, and with a safe margin, we may assume

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that one man can cut down 5 *feet of ordinary hedge in* 15 *minutes, or* 20 *feet in one hour, and allowing for his getting fatigued and for tools to be sharpened,* 60 *feet or* 20 *yards in* 4 *hours.*

EXAMPLE.—In front of a position there are some 2000 yards of hedge which requires cutting down. How many men could do this in 4 hours, and what tools would be necessary?

Assume one man can cut down 5 feet in 15 minutes or 20 yards in 4 hours.

$\frac{2000}{20}$ = 100 men, tools necessary will be 100 bill-hooks, with if possible 100 pairs hedgers' gloves, 4 grindstones and 10 whetstones, and about 8 sappers to sharpen tools.

Here, again, if sappers are not available or any men and instruments for sharpening tools, it would be better to draw extra bill-hooks, say 20 extra, to replace any very blunt ones.

6. Obstacles: Low Wire Entanglement

10 *men make* 100 *square yards in one hour.*

Tools for every 10 *men :* 1 *mallet,* 2 *pliers,* 3 *bill-hooks, and one foot length of wire to each square foot of entanglement.* (Vide *M.M.E.*, sec. x.)

EXAMPLE.—A low wire entanglement 300 yards long by 10 yards wide is required. How many men could make this in 4 hours, and what tools and how much wire would be necessary?

Ten men make 100 square yards in one hour, or say 300 square yards in 4 hours, and as 300 × 10 or 3000 square yards is required, 100 men will be wanted.

Tools: 10 mallets, 20 pliers, 30 bill-hooks.

Wire: 900 feet × 30 feet = 27,000 feet or 9000 yards wire.

N.B.—Low wire entanglements are usually made ten yards wide.

7. Obstacles: High Wire Entanglement

This entanglement requires three times as much wire and takes three times longer to make than a low wire entanglement. Tools as for low wire, with 2 *mauls instead of* 1 *mallet.* (Vide *Instruction in Military Engineering*, Part I. sec. x.)

In other words, 10 *men make* 100 *square yards in* 3 *hours.*

EXAMPLE.—300 yards of high wire entanglement is required, 10 yards broad. Time available, 5 hours. How many men and what tools and how much wire would be necessary?

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10 men make 100 square yards in 3 hours, say 150 square yards in 5 hours; and as 300 × 10 or 3000 square yards is wanted,

Yards. Yards. Men.
150 : 3000 :: 10 : x = 200 men.

Tools: 40 mauls, 40 pliers, 60 bill-hooks.

300 square yards = 27,000 square feet, and therefore 27,000 *yards* of wire will be necessary.

8. Obstacles: Abatis

20 men can make an abatis in 2 rows, 30 yards long, in 6 hours if trees are small and close at hand. Tools: 16 cutting tools, mallets, and drag-ropes. (Vide *Instruction in Military Engineering*, Part I. sec. x.)

EXAMPLE.—An abatis in 2 rows, 300 yards long, is required just in front of a small wood. Time available, 4 hours. How many men and what tools will be necessary?

20 men make 30 yards in 2 rows in 6 hours, therefore 20 men will make 20 yards in 4 hours.

Yards. Yards. Men.
20 : 300 :: 20 : x = 300 men.

Tools: 240 cutting tools, 30 mallets, and some drag-ropes.

N.B.—As in making these abatis one half the party cut the trees and the other half place them in position; if the trees are ready cut, 20 men could make 60 yards in 6 hours, and if, in addition, the abatis was only one row wide, which might with certain trees be sufficient, then 20 men could make 120 yards in 6 hours.

9. Loopholing Walls

10. Notching Walls

One man can make loopholes in a moderately thick wall at the rate of one in half-an-hour, and notches at the rate of one in 10 minutes.

Loopholes and notches should not be closer than one yard. (Vide *M.M.E.*, sec. viii.)

EXAMPLE.—200 yards of moderately thick wall is to be loopholed and 300 notched. Loopholes 6 feet apart and also the notches. How many men could do the work in 4 hours, and how many tools would be wanted?

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One man can make loopholes at the rate of 1 in half-an-hour and one man notches at the rate of 1 in 10 minutes, say 8 loopholes and 24 notches in 4 hours.

$$\frac{200 \text{ yards}}{2 \text{ yards}} = 100 \text{ loopholes required.}$$

$$\frac{300 \text{ yards}}{2 \text{ yards}} = 150 \text{ notches.}$$

$$\frac{100}{8} = 13 \text{ men for loopholing.}$$

$$\frac{150}{24} = 7 \text{ men for notching.}$$

Total, 20 men with 20 picks, say 25 picks to allow for breakages.

11. Demolition of Bridges

In masonry bridges, if the piers are high, then attack the piers, but if this is not so, attack the crown or haunches, preferably the haunches. In girder bridges attack the girders with gun-cotton. Girders are best attacked near a point of support. (Vide *M.M.E.*, sec. xix.)

The charges of gun-cotton and gunpowder are not difficult to remember, they are given in a table in *M.M.E.*, sec. xix.

It is easy to remember that if in the presence of the enemy 50 *per cent. should be added to the charge, and that if gun-cotton is "tamped," half the charge given in the table referred to above is sufficient.*

This being so, the formula for gunpowder at the crown or haunch of a bridge need only be remembered, that is, $\frac{3}{2}$ BT.^{2} = necessary charge in pounds of gunpowder.

Gun-cotton "untamped" requires half the amount, i.e. $\frac{3}{4}$ *BT.*^{2}, *and if it is "tamped," one quarter the amount for gunpowder*, i.e. $\frac{3}{8}$ *BT.*^{2}

Gunpowder should always be "tamped" in bridge demolition.

EXAMPLE.—A bridge, roadway 12 feet wide, thickness of masonry at the arch 2 feet, is to be blown up at the haunches. Calculate how much gunpowder or gun-cotton would be required, and how long it will take to dig down to the haunches. The metalling to the haunches is 5 feet deep.

As the roadway is 12 feet wide, the breadth of the arch including the parapet walls is probably 13½ feet.

B is breadth, *i.e.* 13½ feet, T is thickness of masonry, *i.e.* 2 feet.

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The charge for gunpowder (which is always tamped) is $\frac{3}{2}$ BT.[2]

$$i.e.\ \frac{3}{2} \times 13\frac{1}{2} \times 2^2 = \frac{3}{2} \times \frac{27}{2} \times 4 = 81 \text{ lbs.}$$

The charge for tamped gun-cotton would be

$$\frac{3}{4} \times 13\frac{1}{2} \times 2^2 = 40\frac{1}{2} \text{ lbs.},$$

and if the gun-cotton were tamped, $20\frac{1}{4}$ lbs.

As regards digging down to the masonry at the two haunches, the roadway is 12 feet wide; and as men cannot work closer than 4 feet, this will make three tasks of 4 feet length at each haunch. Ordinary men cannot work in a trench much less than 2 feet wide, though a trained sapper or a navvy could do so. As the depth of each trench is 5 feet, the cubic contents of each task will be $4 \times 5 \times 2$, or 40 cubic feet. The work is very difficult, so that instead of each man excavating 80 cubic feet with large tools in 4 hours, he could hardly get out the 40 cubic feet of this difficult soil in the time.

It will therefore take 3 men to each trench, or 6 men in all, but there might well be 2 men to each set of tools or to each task, *i.e.* 12 men, and in that case they could finish in one-third less time, say in 2 hours and 40 minutes.

A candidate could hardly be expected to remember the exact number of tools which the text-books recommend for different tasks, but the tools are largely a matter of common sense.

In excavation each man needs a pick *and* a shovel, and for low wire entanglements 1 mallet, 2 pliers, 3 bill-hooks to every 10 men. An easy *memoria technica* for this is: "M. P. B. is one, two, three."

For felling trees each man requires some cutting tool, and in abatis (as ordinarily speaking one half the men fell trees and the other half place them in position) one half the men want felling axes or cutting tools, the others some bill-hooks, drag-ropes, and mallets. With bill-hooks and felling axes some means of sharpening tools is clearly necessary. Add therefore a few grindstones, whetstones, &c.

For loopholing and notching ordinary walls each man requires some tool, for choice a pickaxe, but crowbars are useful.

I should therefore not advise a candidate to learn the number of tools prescribed by heart.

Examiners nowadays do not require exact details, but rather principles with *fair* detail.

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The number of men necessary for each task is very easy to learn, for they are given in easy round numbers.

These should be learnt, and to make it still more easy I recapitulate them.

1. *Excavation.*—One man with large tools digs 80 cubic feet in 4 hours, and with small tools 45 cubic feet in 3 to 4 hours.

2. *Gun Epaulements.*—8 men take 2 hours for one epaulement, and for very good work 8 men 4 hours.

3. *Clearing Copses.*—One man clears 100 square yards in 4 hours.

4. *Clearing Woods.*—One man (infantry) does about 100 square yards in 4 hours.

5. *Clearing Hedges.*—One man clears 5 feet in 15 minutes, or about 20 yards in 4 hours (as he will get tired).

6. *Low Wire Entanglement.*—10 men 400 square yards in 4 hours.

7. *High Wire Entanglement.*—Takes three times more men, or the same men three times as long as low wire entanglement.

8. *Abatis.*—20 men make 30 yards in 6 hours (2 rows of trees and cutting the timber, which must be near at hand).

9. *Loopholing Walls.*—Loopholes *at the rate of* one in half-an-hour can be made by one man.

10. *Notching Walls.*—One man makes notches *at the rate of* one in 10 minutes.

11. *Demolition of Bridges.*—Necessary charge is for gunpowder $\frac{3}{2}$ BT^2., for gun-cotton half the amount, *i.e.* $\frac{3}{4}$ BT^2., and for tamped gun-cotton, $\frac{3}{8}$ BT^2.

A candidate with these simple facts and with a little common sense can solve nearly every engineering problem in connection with tactical schemes.

The great thing to remember is that he must suit his engineering to his tactics, and not make his tactics suit some engineering feat which he wishes to perform.

The advanced report on the examination in May 1904 issued at the War Office by the Director of Staff Duties says, "In many cases positions seemed to have been taken up solely in order to introduce typical defences," and again "Three subjects" (*i.e.* tactics, military engineering, and topography) "had been crammed as a separate subject, and little attempt had been made to treat the problems as situations only to be solved correctly by an intelligent application of the principles of all three in combination."

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The above remarks are highly instructive, and intending candidates will do well to take them to heart.

I cannot afford, in a book devoted to tactics, to give more space to military engineering, but students who care to read worked-out schemes in military engineering can do so in a companion to this book written by Major Ewbank, R.E., D.A.A.G. for Instruction, and by me in conjunction, and entitled *Fortification applied to Schemes* (Thacker, Spink & Co., Calcutta), and obtainable also at Thacker & Co.'s, Creed Lane, London, E.C.

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CHAPTER XII

SCHEMES WITHOUT SOLUTIONS

QUESTIONS 1 to 45 which follow are all based on the map of the river Yare country, *i.e.* Map No. II.*a*, and, as a rule, refer to isolated problems. They are intended for officers who may not have the time to work out a whole scheme *in extenso*. A series of whole schemes, involving some 3½ hours' work, follows after these questions.

N.B.—When a candidate considers that, in order to answer a question, he requires more information regarding the military situation than is given by the examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The examiner allows for very great diversity of opinion with regard to the solution of a tactical problem.

NOTE.—*Officers are reminded that for examination purposes it is necessary to state fully the considerations and reasons which influenced them in deciding on particular dispositions, particular orders, or particular action.*

1.

A rear guard consisting of—

3 Squadrons cavalry,
50 Mounted infantry,
½ Company engineers,
2 Batteries field artillery,
3 Battalions infantry,

is bivouacked at Alton.

In the early morning the commander receives information from his cavalry, which is on outpost five miles south of Alton, that it is in contact with the enemy's advanced guard marching from Penge, along roads on right bank of river Yare.

The commander at the same time receives orders from divisional headquarters at Borton to check the advance on Borton as long as possible.

(*a*) Show on the map the distribution of the troops on the position you would select.

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(*b*) In what order would retirement be effected?

(*c*) In what manner does the occupation of this position by the rear guard of a force differ from the manner in which you would have held it with an independent force?

(*d*) An increasing danger is incurred by the rear guard as the distance between it and the main body becomes greater.

What is this danger?

How do you propose guarding against it?

2.

A strong force convoying ammunition and warlike stores is moving from Goring (north of map) *viâ* Stoke and Dod's Farm to Penge (south of map).

The advanced guard preceding the convoy by some three miles has reached its bivouac at Sion Church and Sion Turpin's Woods.

It consists of—

2 Squadrons cavalry.
120 Mounted infantry.
2 Guns horse artillery.
1 Battalion infantry.

The commander of the advanced guard receives in the afternoon the following instructions from the commander of the whole convoy column:—

"I have received reliable information that my front towards the south is clear; a force of the enemy is advancing from the direction of Liss (west edge of map) to endeavour to attack and intercept the convoy.

"Employ to-morrow morning the whole of your force as a flank guard to protect my right flank. I shall detach a small advanced guard from my column.

"The head of my column will reach Sion Church at 8 o'clock to-morrow morning, and I estimate length of column about 2500 yards, and rate of moving three miles an hour.

"When the rear of my column has passed the Red Lion, there will be no further danger of a flank attack. You will then withdraw your flank guard and reinforce my rear guard."

(*a*) Explain in detail the dispositions ordered to be made early the following morning, and show on the map the position of each separate body of the flanking force.

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(*b*) At what time will you order the furthermost body to retire and become a rear guard, or, in other words, at what time do you calculate that the tail of the convoy column will pass the Red Lion?

3.

Under what disadvantages does the artillery of the attack often labour as compared with the artillery of the defence?

Give your views on the effect which quick-firing guns and long-range artillery will probably have on "the defence" and on "the attack."

4.

Referring to Question 1—

The cavalry has fallen back to the positions taken by the rear guard to defend approaches on Borton, but the enemy fails to pursue, and after a lapse of some time it is evident that the touch with the enemy has been lost.

What measures would you take to discover the enemy's main body, and in what direction he is moving?

5.

Given a force consisting of—

2 Squadrons cavalry,
2 Batteries artillery,
4 Battalions infantry,

to hold in check an enemy advancing from New Bridge and Tilford—your own line of communication being to south, *viâ* Lye Farm. You select Maharambout Wood and part of Glen Wood for your position of defence.

(*a*) Show the extent of front you will take up.

(*b*) Give a detailed description of measures for defence, and mark on the map the position you assign to each unit.

(*c*) Remark on the advantages or otherwise of the position.

6.

A battalion of infantry proceeding from Dod's Farm (east edge of map) to Borton is ordered to reconnoitre Maharambout Wood.

In what formation should this be done?

The advance of the battalion is checked at Larry, which is found to be occupied by a detachment of the enemy You are unaware of his strength and disposition. How would you proceed?

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7.

In close country and fighting against indifferently armed savages, who adopt shock tactics, would you adopt "close formations" in your advance as a flying column, with due complement of baggage animals?

What advantages have close over extended formations, and what are the disadvantages?

8.

The commander of an advanced guard at Borton receives instructions to have the advanced guard in column of route disposed on the road at 8 A.M., preparatory to marching south *viâ* Alton. His instructions are: "Send out scouting party with vanguard, and let the tail of your main guard be at Garth's Cross. All to be in position at 8 A.M."

For convenience of supply, &c., the troops composing the advanced guard have been cantoned as follows:—

4 Squadrons cavalry and detachment mounted infantry at Borton.
1 Battery artillery
½ Company engineers } at Saw Mill.
1 Battalion infantry at Larry.
1 Battalion infantry at the "Plough."

Mounted corps proceeding at trot.

Infantry corps marching.

(*a*) Issue orders at what time each corps shall start to be in its place in column of route by 8 A.M. (In answering this question, confine the orders for time of march to the troops who are to form the main guard at Garth's Cross.)

(*b*) Show on the map the disposition of the advanced guard.

9.

The advanced guard of a force, having reached its bivouac, sends forward 4 companies as outposts. On approaching the ground, in what formation should each company advance?

10.

A battalion is at Bull Inn, and a battalion at Larry, in support of the independent cavalry, which is reconnoitring some miles beyond and west of the river Yare.

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Information is received that the enemy is pushing back the cavalry.

The commander of the two infantry battalions receives instructions to prevent the enemy advancing to Stoke Hill, Wantage Downs, Lye Farm.

What measures should he take to carry out his instructions?

11.

The commander of the outposts is given the line New Bridge, Bull Inn, Lodge, Cox's Farm to be the line of his piquets, facing west.

His force consists of two squadrons cavalry and two battalions infantry.

(*a*) How far would you send reconnoitring patrols?

(*b*) How often during the day?

(*c*) Of what arm?

(*d*) Birch Wood is beyond the left piquet of your outpost line, but it commands the head of Lye Farm Valley.

How will you treat it?

The enemy's reconnoitring patrols have appeared in the woods near Keeper's Lodge; you have reported the circumstance to the officer commanding the outposts.

What should he do to stop the enemy's curiosity?

(*e*) During the night no change is made in the line occupied by the outposts.

In order to secure additional protection, what measures should be taken?

(*f*) Where would you establish signalling stations?

12.

In command of a rear guard consisting of—

3 Squadrons cavalry,
2 Batteries artillery,
3 Battalions infantry,

(*a*) Select a position north of river Yare to oppose an enemy advancing in a north-westerly direction from Thorpe (south of map).

(*b*) Show your dispositions and the precautions you would take to secure your flanks.

(*c*) Criticise the advantages and disadvantages of the position selected.

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13.

With a force superior by—

3 Squadrons cavalry,
2 Batteries artillery, and
4 Battalions infantry,

to that of your enemy,

(*a*) Explain the dispositions which you would make to attack the position mentioned in Question 12.

(*b*) Show on the map the different positions which your artillery would take up.

14.

A force consisting of—

3 Squadrons cavalry,
3 Batteries artillery,
4 Battalions infantry,

is bivouacking in Rushbrook Valley, between Lye Farm and Hollow Farm, and is operating northwards.

(*a*) What numbers of each arm do you consider sufficient to employ on outpost duty during daylight?

(*b*) Show on the map your line of outposts and measures taken to secure your flanks.

(*c*) By night, what changes would you make in the position and composition of your outposts—(no bridges have been destroyed as they will be wanted subsequently)?

15.

Show neatly on the map, with coloured pencil, the disposition of the advanced guard of a regiment cavalry, one battery field artillery, and a brigade of infantry marching in the enemy's country from Thorpe *viâ* Bell's Ford, Pat Mill, Hall's Farm, &c.

16.

Preparatory to an attack, the cavalry of the advanced guard, supported by the artillery, is ordered to make a reconnaissance in force of the position alluded to in Question 12.

What are the chief points, as regards the enemy's disposition and strength, upon which specially selected cavalry officers should endeavour to obtain information?

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17.

In touch with the enemy, who is retreating northwards, an advanced infantry brigade with one regiment cavalry and one battery field artillery reaches the south bank of the river Yare at dusk.

Show what dispositions of the outposts you would consider sufficient to secure the safety of the main body.

18.

An officer's patrol from Stoke Hill observed a force of the enemy, consisting of cavalry, artillery, and infantry, crossing the river Yare by New Bridge; the infantry in fours took five minutes to cross, cavalry in sections one minute, artillery with wagons one hundred seconds.

State the approximate strength of the column.

19.

You are escorting a convoy of wagons, one mile in length, moving with supplies, in a hostile country, from Bray *viâ* Bare Farm (north-west corner of map), up the valley of river Yare. Your escort consists of—

1 Squadron cavalry.
4 Companies infantry.

(*a*) Show on the map the disposition of your command when it is about Bare Farm.

(*b*) You hear that 600 indifferently armed peasants have assembled at Borton to oppose your advance, how do you propose to act?

20.

In command of 150 mounted infantry—acting in the enemy's country—you have orders to requisition provisions and supplies from the villages of Stoke, Rondal, and Cromer, and from the adjacent farms in the valley of river Yare.

You have arrived, in the middle of the night, at Sion Church cross-roads (top of map).

Describe how you will carry out your orders up to your return to Sion Church.

The enemy's forces are known to be near Derby, some miles east of Cromer.

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21.

Six companies advancing from Goring (north of map) have, after a long and obstinate fight in the wooded and broken ground north of the Manor, succeeded in driving the enemy out of Sion Wood and adjacent enclosed country.

The enemy has fallen back to dispute the passage of the river Yare.

What orders would you issue before continuing the pursuit of the enemy?

22.

You are in command of an advanced guard consisting of—

2 Squadrons cavalry,
2 Batteries artillery,
4 Battalions infantry,

advancing from east to west—the bridges on the river Yare below Stoke Bridge having been destroyed.

You construct a bridge over the river Yare, under cover of Senkin's Wood.

The advanced guard of the enemy coming from Liss (south-west of map) has reached the heights above Dunstan Hall.

Show on the map the manner in which you would dispose your troops in order to cover the bridge; point out the advantages and disadvantages of your position.

23.

(*a*) Calculate the minimum strength, and show on the map the disposition of the outposts by day, to cover the position described in the foregoing question.

(*b*) Notify the changes in dispositions which you would make for the night.

24.

A scout observed some of the enemy's cavalry and infantry crossing at a walk the river Yare, by the bridge at Tilford—the cavalry marched in sections, and took 5 minutes in passing; the infantry followed in fours, and took 10 minutes in passing.

What was the strength of the column?

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25.

You are marching from south to north with a force consisting of—

3 Squadrons cavalry,
2 Batteries artillery,
4 Battalions infantry.

The head of your column has reached a point about two miles south of Dod's Farm (south of map).

From a reconnaissance the night before, it has been ascertained that the enemy's artillery is in position on the plateau to north-east, and above Rondal, also on the spur between Wey Brook and Doe Farm; that the enemy's infantry is in position between Reid's Farm and Box Wood, facing south. Issue your orders for the attack on this position.

26.

In continuation of Question 22.

The commander of the force advancing from Liss (south-west corner of map), recognising the strength of the position taken up by his enemy, who is covering the newly-constructed bridge at Senkin's Wood, determines to send a column, consisting of some infantry with guns, by a night march, *viâ* Tilford and Sion Church, to take up a position south of Reid's Farm, from whence the guns can enfilade the bridge at Senkin's Wood, and outflank the enemy.

(*a*) During the day preceding the night march, what information should selected officers have been sent to gather?

(*b*) To prevent mistakes at night, where two or three roads meet, what precaution should be taken?

(*c*) To prevent the enemy hearing or seeing the movement, what cautions would you give the men?

(*d*) Detail your order of march, distance between units, and place of guns.

(*e*) Where would you order halts to be made?

(*f*) What length of time will you allow for the column starting from Liss cross-road (south-west corner of map) to reach Reid's Farm on a dark and rainy night?

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27.

The main force having advanced northwards beyond Sion Church (top of map), you are left in a hostile country in command of—

1 Squadron cavalry,
2 Machine guns,
4 Companies infantry,

to hold the bridge at Stoke, and to protect wounded men and a depôt of military stores in the village of Stoke.

(*a*) Explain the dispositions which you would make for the defence and security of your posts.

(*b*) Criticise the situation.

28.

Following up an enemy, who is retreating northwards through Sion Wood, the two companies under your command, in extended order, have reached Reid's Farm; you hear firing to the north-east, but, owing to undulating ground and intersecting country, you have become detached from the remainder of the battalion.

In anticipation of the enemy opposing your advance through Sion Wood, what orders would you give?

29.

A force is retiring from east to west, *viâ* Thorpe and Borton.

In command of the rear guard, consisting of—

2 Squadrons cavalry,
1 Battery artillery,
3 Battalions infantry,

select a position, facing east, to cover the crossing of the river Yare at Borton by the main body.

(*a*) Show on the map the disposition of your force.

(*b*) Explain the advantages and disadvantages of the position.

(*c*) When hard pressed by superior numbers of the enemy, how would the withdrawal of the rear guard be carried out?

30.

(*a*) State the strength and composition, and show on the map the disposition of outposts which you would make under the circumstances detailed in foregoing question.

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(*b*) At sundown the outposts are ordered to rejoin the main body of the rear guard, which is continuing its retreat.

What measures should the commander of the outposts take to cover the withdrawal?

31.

Referring to Question 29. You are in command of a force of the three arms, superior to your enemy in the proportion of three to two. Your main body is 5 miles behind you.

You are advancing south of river Yare, moving from east to west; explain in detail how you would attack the rear guard in the position, as described by you, in reply to Question 29.

32.

You are in command of 4 squadrons cavalry, and have bivouacked near a village four miles north of Tilford.

You receive a report that a flying column of the enemy consisting of cavalry and infantry, engaged in requisitioning the produce of all the farms south of river Yare, is cantoned about Dod's and Hall's Farms; information leads you to believe that their discipline and precautionary measures at night are slack, and you determine on a surprise.

(*a*) At what time would you start?

Describe the route you would follow, starting from Tilford, and state your reasons.

(*b*) In what order would you march, and what precautionary measures would you take?

(*c*) Arrived as near as possible, explain your mode of attack, and at what time you would make that attack.

(*d*) To provide for the rallying of your command in case of failure or the enemy proving too strong, what orders would you issue as to retreat? Mention the spot on map on which you order the rally.

33.

In command of an escort consisting of 50 cavalry and 200 rifles, you are accompanying a convoy of wagons, half a mile long, through an enemy's country, moving from Thorpe in a westerly direction.

(*a*) Which road shown on the map would you move by, and why?

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(*b*) Show on the map the convoy and distribution of escort, and explain the functions of each division of the escort.

(*c*) On being attacked by the enemy, describe in general terms the action—

Of the convoy.
Of the cavalry escort.
Of the infantry escort.

(You are to assume the nature of the attack and the locality.)

34.

In command of a force consisting of—

2 Squadrons cavalry,
2 Battalions infantry,

you are retiring with a small convoy, half a mile long, from Luneburg (east edge of map) westwards towards Liss.

Arrived at Thorpe, you receive information that the enemy, consisting of—

3 Squadrons cavalry,
1 Battery of artillery,
2 Battalions infantry,

has arrived at Cromer in pursuit of your force.

(*a*) By reference to the maps, state what road or roads you would move your force by, and your reason for such selection.

(*b*) What measures would you take to guard your threatened flank?

N.B.—Ten Irish cars are found in Thorpe.

35.

In command of three squadrons cavalry, conveying treasure and prisoners of war through the enemy's country, marching from south towards north, you have reached at sunset Dod's and Hall's Farms.

You determine to halt at these farms. What measures would you take to secure your position by outposts?

36.

With a view to occupying the village of Borton and of seizing the bridges over river Yare,

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Force A, consisting of—

2 Squadrons cavalry,
2 Batteries artillery,
3 Battalions infantry, and

Force B, consisting of—

2 Squadrons cavalry,
2 Battalions infantry,

starting respectively from Thorpe and from Rondal, have orders to reach—

(Force A) Dod's Bridge,
(Force B) Garth's Cross,

simultaneously at 8 A.M.

Calculate time of starting of each force, to allow for the head of each column reaching above-mentioned places at 8 A.M.

(The scale of the map is to be taken at 2 inches to 1 mile in answering this question only.)

37.

The line of outpost sentries is along western edge of map, facing west. Information has been received that a reconnoitring force of the enemy is approaching the portion of your line posted at Lorne Park, apparently with a view of forcing and penetrating the outpost screen.

The reserve of your outposts, consisting of one battalion, is at Garth's Cross, near Borton.

What action would you take as commander of the outposts?

38.

In command of a contact squadron 120 strong, coming from Luneburg (east of map), you are rcconnoitring south of river Yare.

At sundown, the scouts of the enemy, coming from Liss (west of map), have been seen at the time your isolated command was taking up its quarters at Hall's Farm.

You expect to be attacked by superior numbers during the night. What arrangements would you make to disconcert the probable plans of the enemy?

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39.

In command of a force consisting of—

3 Squadrons cavalry,
2 Batteries artillery,
4 Battalions infantry,

take up a position facing east, to oppose an enemy advancing from Thorpe with the intention of seizing the bridges over river Yare, between Borton Village and Dod's Bridge,

(*a*) Point out the advantages of the position you have selected.

(*b*) Show on the map the disposition of your force.

(*c*) What instructions would you give the officer commanding the artillery?

(*d*) What specific objects have you had in view in posting your reserve?

(*e*) It having become necessary to withdraw from the position, what is the best manner of doing this and of covering the retreat?

40.

The advanced guard of a force, marching from east to west through an enemy's country, moves from Thorpe *viâ* Pat Mill, Hall's Farm, Dod's Farm, Lary Forge to Borton; it consists of two squadrons cavalry, 48 files each, one battery of artillery, two battalions infantry (six companies of 100 men each).

(*a*) Show on the map the disposition of your advanced guard, when the main body is between Bell's Ford and Pat Mill.

(*b*) Omitting figures, state the general principle which guides the distances between the vanguard and the main guard of advanced guard, and between latter and main body of force.

41.

Assume, for this question only, the scale of the map to be 2 inches = 1 mile. A force of all arms of the enemy advancing from north to south has crossed the river Yare by Stoke and Rondal Bridges, and taken up a position on Long Hill.

The opposing force, consisting of—

3 Squadrons cavalry,
3 Batteries field artillery,
4 Battalions infantry,

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with ammunition and baggage trains, is advancing from Liss; this force crosses the river Yare by the bridge at Borton, and under cover of Glen Wood, marches across the enemy's front to take up a position on Epsom Downs.

(*a*) What measures should be taken to reconnoitre the country?

(*b*) State the order of march and mark the dispositions on the map when first moving off, after the whole force has crossed the river Yare.

(*c*) In what order of march and general formation should the troops advance towards Epsom Downs? Show this neatly on map.

42.

1 Horse artillery battery.
3 Squadrons.
1 Field artillery battery.
4 Battalions.

A force, as per margin, takes up a position somewhere near the line Stoke, Dick Farm, Maharambout Wood, Cox's Farm, "Red Lion," facing east.

(*a*) State strength and composition of your outposts by day.

(*b*) State strength and composition of your outposts by night.

(*c*) Show with coloured pencil your "line of defence."

(*d*) The outposts having been ordered to fall back, how do you propose to cover the movement?

43.

The bridges over the river Yare below Borton having been destroyed, you are left in command of a rear guard consisting of—

1 Squadron cavalry,
2 Guns,
1 Battalion infantry,

with orders to make dispositions to check the enemy attempting to cross at, or between, Borton and Alton.

(*a*) Show on the map the dispositions you would make.

(*b*) State the advantages and the disadvantages of the situation.

44.

A column is retreating northwards *viâ* the "Stag" (see right top corner of map). You have been left in command of six companies to act as a rear guard, with orders to delay the enemy,

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advancing from Luneburg, in his passage of the river at the bend near Mick's Farm.

You have posted two companies at the bridge at the "Forge," two companies at the bridge at the "School," and two companies are placed in *broken ground* on the spur in a strong position on 350 feet contour, 700 yards south of the *School*, which is situated half-way between Rondal and Cromer.

(*a*) Mark these dispositions on the map and criticise them.

Three companies of the enemy have crossed the river at 300 feet contour, 800 yards north of Cromer, with the object of making a turning movement, but being fired on by the two companies of the rear guard on the spur, these three companies advance to attack them.

(*b*) Criticise this action.

45.

For convenience of shelter and supply, troops have been cantoned as follows:—

1 Battalion, 800 men, at Cromer, assumed to be from Thorpe 6 miles.
1 Field battery at Hall's Farm, from Thorpe 4 miles.
1 Horse battery at Lye Farm, from Thorpe 5 miles.
1 Regiment of cavalry, 500 strong, at Alton, from Thorpe $7\frac{1}{2}$ miles.
1 Battalion, 900 men, at Cox's Farm, from Thorpe 7 miles.

At what time should each corps march, so that the whole force may be concentrated between the roads south-west of Thorpe by 10 A.M.?

SCHEME "A," RIVER YARE MAP, OR MAP No. II.a

A force (A) composed of—

1 Squadron of cavalry,
2 Field batteries,
50 Mounted infantry,
4 Battalions of infantry, each 800 strong,

has reached the Green (south-west corner of map) from Liss. The object of its commander is to hold the passages of the Yare River between Alton and Borton against an enemy (force B), who is reported on the same day to be approaching Luneburg,

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nine miles east of Thorpe, in superior force. The river is impassable, except at the bridges, and at the ford situated west of Alton. The left flank may be regarded as safe, but the right is exposed to attack.

Question I

Night outposts are thrown out by force A.

(*a*) Calculate their composition and strength, and state the grounds on which you have based your calculations.

(*b*) Show the disposition of the outposts on the map in black, and state the general plan upon which such disposition is based.

Question II

At daybreak on the following morning you are sent to the front in command of a detachment of force A, consisting of—

1 Squadron of cavalry,
1 Field battery,
50 Mounted infantry,
1 Battalion infantry.

Your orders are to proceed by Lye Farm and the Rush Brook towards Thorpe, and to delay as far as possible the enemy's advance, should he be met with, but without committing your troops to anything further than a delaying action. The field battery and mounted infantry, which you accompany in person, are passing Lye Farm, and the head of the infantry battalion is approaching Keeper's Lodge, when the following message is signalled from the officer commanding your cavalry :—

"Byng's Lodge,
"7 A.M.

"A hostile force of the three arms, strength about one division, is approaching Thorpe from the south-east; the head of the infantry portion of the vanguard of its advanced guard is just entering that village. I have checked the advance of the enemy's cavalry, which consists of two squadrons, but am now about to retire."

State what action you would take, and give your reasons for the plan proposed.

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Question III

In continuation of the last question, the cavalry of force A having retired in a south-westerly direction, followed by that of force B, the artillery of the advanced guard of the latter force, viz. one battery, is ordered to the front, and comes into action on Long Hill against hostile artillery near Gillon's Cover.

You, with 100 mounted infantry, have been detailed as escort to the guns of force B. You discover that Lye and Dod's Farms are held by the enemy's infantry.

Show on the map where you would place your men, and state briefly the reasons that influence you in making your dispositions.

Question IV

Force B, consisting of—

2 Squadrons of cavalry,
3 Field batteries,
100 Mounted infantry,
6 Battalions, each 800 strong,

having pushed back the detachment referred to in Question II., which had been despatched to delay its advance, attacks the position occupied by force A. You are in command of the right attack, which has gained possession of the eastern portion of Glen Wood, and is endeavouring to penetrate into the western portion of the wood, but so far without success.

Your force consists of $2\frac{1}{2}$ battalions, of which one battalion is in firing line, another battalion is at the cross-roads 100 yards south of Larry, and the remaining half-battalion is about 400 yards in rear of the second battalion. The three batteries, with 100 mounted infantry, are also acting under your orders. The latter are covering your right flank, and are occupying Saw Mill Wood. The artillery is in action on the north-western slope of the mount, two batteries firing on the enemy's artillery, which is on the high ground west of Borton, the third battery firing on the border of that portion of Glen Wood which is in the occupation of the enemy.

You are informed—

That a fresh hostile battery has come into action from the border of Hare Wood (south-east of Tilford), and that two fresh battalions of hostile infantry have emerged from the same wood and are advancing upon the Saw Mill; also that above 100 hostile

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cavalry or mounted infantry, apparently the latter, are rapidly approaching the ford over Mill Brook near the figures 450 on the map.

At the same moment a vigorous counter-attack is made upon the position occupied by your infantry in Glen Wood, which attack, although repulsed, may be taken to signify that the enemy in that part of the field will not be content with offering a purely passive resistance.

What plan of action would you adopt, and what orders would you issue to the commanding officers serving under you?

You may assume that you can receive no assistance from the remainder of the troops composing force B, who, however, are themselves in no immediate danger; and, save for the fact that their presence secures your left flank, they may, for the purposes of this question, be entirely disregarded.

SCHEME "A²," RIVER YARE MAP, OR MAP No. II.a

GENERAL IDEA.—*A force (A) is encamped on Epsom Downs, about the Mill (bottom of map), expecting orders to march on Frimley (top of map), in the neighbourhood of which place the enemy is known to be, though his exact position and strength are uncertain.*

QUESTION I

You are sent with 40 cavalry and 100 infantry to reconnoitre for news of the enemy all the country to the north of the river Yare. Describe how you carry out this duty. Assume that you find Sion Church Wood occupied by the enemy; and submit one, or two, of the reports you send in to your General.

QUESTION II

The advanced guard of the force A, strength as per margin, is bivouacked about Dod's Farm, and furnishes outposts, watching the front from the ford across Mill Brook, on the left, to the ford at Mick's Farm, on the right. Estimate the troops required for the outposts on the front indicated; show how you will dispose them by day, and write full remarks on the position occupied and the dispositions made.

Advanced Guard.
- 1 Regiment cavalry, 500 strong.
- 3 Battalions infantry, 900 each.
- 6 Guns Royal Horse Artillery.
- 1 Company engineers.

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Question III. For Lieutenants only

In continuation of the preceding question, assume that you are in command of No. 1 piquet of 50 men at Mick's Farm, with a support of 50 men, within a quarter of a mile, in the fields behind you.

(*a*) Detail any special dispositions for observation, and security *during the night*, that you would make.

(*b*) Say how you would act on hearing from your patrols, about an hour before daybreak, that Cromer was being occupied by the enemy. Assume that almost simultaneously with the receipt of this report you hear sharp firing in the direction of the bridge at the Forge on your left, which is in charge of No. 2 piquet.

Question IV. For Captains only

The attack on the piquets is repulsed, but as it is evident that the enemy is in great strength to the north of the river Yare and contemplates an attack in force, the commander of the force A (see "General Idea") decides to deploy on the general alignment—Wantage Downs, Long Hill, Tor Wood—and await his onset. It may be assumed that the force A is proportionate to the extent of front to be held.

Examine the position indicated critically; note its strong and its weak points; remark specially on its artillery positions, and its facilities, or otherwise, for counter-attack or sudden assumption of the offensive; and, engineers being available, say how you would employ them.

Question V. For all Officers

The action referred to as probable in the preceding question does not come off. The enemy withdraws northwards, and it is decided therefore that the force A should resume its march on Frimley. By some blunder, another force (B), coming from Thorpe, and marching *viâ* the Forge and Rondal towards Goring (top left corner of map), is allowed to cross its line of march just as it is starting. This force B consists of 2 infantry brigades, each 4 battalions, each 900 strong; 3 cavalry regiments, each 500 strong; 5 batteries artillery (3 field and 2 horse); and, in

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addition, ammunition columns, trains, &c., covering two miles of road.

Estimate the delay caused to force A by having to wait for the passage of this force B, the whole of which may be assumed to be marching together (order unimportant for the purposes of this question) in column of route, by a single road.

Question VI. For all Officers

(*a*) The advance being resumed, show on the map the disposition of the advanced guard of the force A (for composition, see Question VI.) at the moment that its *Vanguard Support* is just clearing the village of Rondal.

(*b*) Explain how your dispositions and intervals have been affected in this instance by—

(1) The known proximity of the enemy.
(2) The character of the country through which you are marching.

Question VII. For Captains only

Your reconnoitrers report to you, A.G. commander, that the line Frimley-Low's Farm is held by a rear guard of the enemy, apparently consisting of 2 battalions infantry, 1 battery Royal Horse Artillery, and 2 squadrons cavalry. You decide to attack at once.

Write out—

(*a*) Your general idea for the attack, with reasons for the action you propose.

(*b*) Detailed instructions for your cavalry and artillery.

And sketch your entire force on the map in the positions in which you expect each portion of it to be when your attack is well developed: say when your firing line is 1000 to 1200 yards from the enemy's position.

Question VIII. For Lieutenants only

You are sent with four companies to aid in the above attack, by working up by the Whit Water Valley, *viâ* Joe's Mill, and attacking the enemy's left at Low's Farm. Describe how you will carry out your task, and assume that you find the wood just above Joe's Mill held by two companies of the enemy.

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SCHEME "B," SPARE MAP No. VI.a

TACTICS

[3½ hours allowed—300 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a practical problem.

The *whole* paper should be attentively considered before any single question is attempted.

NOTE.—*Officers are reminded that*, for examination purposes, *it is necessary to state fully the* considerations, *and* reasons, *which influence them in deciding on particular dispositions, particular orders, or particular action.*

GENERAL IDEA

You command the advanced guard of a Blue force moving from Upton on London, *viâ* New Farm, The Grange, Tad Farm, Elstead. On the night of the 11th October you are halted about 4 miles south of Crosswater Farm (left bottom corner of map). Your force consists of 2 squadrons cavalry, 1 battery horse artillery, 3 battalions infantry, and 2 companies of mounted infantry.

Your intention is to start at 4 A.M. on the 12th and secure the bridges and fords across the Dene at Elstead, Crooksbury; but when you reach Crosswater Farm at 6 A.M. you learn that these places are already occupied by the enemy, who is now moving southwards to meet you, and is evidently in superior strength. You decide at once to post yourself to check his advance until you can be reinforced.

Write:

1. An appreciation of the situation. (55 marks.)
2. Your plans. (35 marks.)
3. Your orders. (40 marks.)
4. Show your dispositions on the map. (30 marks.)

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5. You are placed in command of a convoy with an escort consisting of 2 battalions of infantry and 1 mountain battery. How would you dispose this force, and what are the chief points you would devote your attention to? You are operating in a hilly country and among savage tribes. (60 marks.)

6. Discuss the rôle of cavalry in action, especially with reference to its application in the Boer war in South Africa. (80 marks.)

SCHEME "C," SPARE MAP No. III.a

TACTICS

[3½ hours allowed—300 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great differences of opinion with regard to the solution of a tactical problem.

The *whole* paper should be attentively considered before any single question is attempted.

1. For all Officers

A force (Blue) is retiring from London to Reading (N.E. to S.W.). The rear guard consists of 1 battery Royal Horse Artillery, 3 squadrons cavalry, 4 battalions infantry, 1 company engineers. Select a position for it covering the two bridges across the Rye stream between Esher and Stoke. All other bridges over this stream may, *for the purposes of this question*, be considered as destroyed, and the stream itself unfordable. Show on the map the proposed disposition of the rear guard, and discuss fully the advantages, and disadvantages, of the position occupied. (60 marks.)

2. For all Officers

The rear guard is pressed by superior numbers, and at last compelled to retire across the Rye stream. Explain in detail

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how you will withdraw, and the fresh dispositions you will make in rear of your first position. Make any assumption you please regarding the enemy's movements. (60 marks.)

3. For Captains only

You are in command of a force (Red), strength as below, pursuing the rear guard referred to in the preceding questions—

2 Batteries Royal Horse Artillery, 6 squadrons cavalry, 6 battalions infantry (divided into 1st and 2nd Brigades).

You find the enemy holding a strong position in and about Ashton. Explain in detail how you will attack it, and give reasons in support of the dispositions you propose. (50 marks.)

4. For Lieutenants only

The 2nd Brigade (see preceding question) is detailed to make a direct attack on Ashton Court, advancing from the Orleans Arms, and *viâ* Farley Lodge. Explain the order, and formations, in which it will attack: discuss the probable events of its progress up to the capture of the place. (50 marks.)

5. For all Officers

The commander of the Red force (Question 3) details you to take 2 non-commissioned officers and 6 troopers, and, starting with them from about Orleans House, to find out what means there are of crossing the Rye stream, and the river Mole, at points lying to the north of the South-West Railway. Say how you will carry out this reconnaissance. Assume that a hostile patrol is encountered in Upper Ditton, and submit one or two of the reports you send back to your commanding officer. (40 marks.)

6. For all Officers

The Blue force (Questions 1 and 2), after a rear guard action about Ashton and Stoke, withdraws to the west of the Rye stream, and blows up all the bridges to the south of the railway. It now places outposts *for the night,* covering Esher. Estimate the force required for this purpose, dispose the troops on the map, and discuss fully the situation, and the dispositions made. (60 marks.)

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7. For all Officers

A Blue patrol sent out at daylight the next morning reports that the Red force was observed on the march moving north, *viâ* Rye Green. The time taken, by each arm seen, in crossing the railway was as follows:—

	Minutes.
Cavalry leading, in sections	4
Infantry, in fours	10
Guns, behind the infantry, in column of route .	3

Estimate the force observed. (30 marks.)

SCHEME "D," SPARE MAP No. III.a

TACTICS

[3½ hours allowed—300 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem,

The *whole* paper should be attentively considered before any single question is attempted.

Note.—*Officers are reminded that*, for examination purposes, *it is necessary to state fully the* considerations, *and* reasons, *which influence them in deciding on particular dispositions, particular orders, or particular action.*

General Idea

A strong advanced guard marching on Epsom from London halts on the evening of the 10th May on the line Stoke Ashton. You are appointed to command No. 1 section of the outpost line extending from the Milton Brook to the Claygate-Epsom road inclusive—the Milton Brook is impassable and can only be crossed by the bridges. From the Claygate-Epsom road the outpost line is carried on through Claygate by No. 2 section. The troops placed at your disposal are:—

1 Squadron cavalry.
2 Guns.
1 Battalion infantry.

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1. Discuss the situation, and explain the dispositions you propose, with their advantages and disadvantages. (50 marks.)

2. Show your dispositions clearly on the map. (30 marks.)

3. Write out instructions to be acted on in case of attack. (30 marks.)

During the night the officer commanding the advanced guard receives information from the officer commanding the main body that a force of the enemy is marching from the west in the direction of the bridges over the Mole at Esher, and that, with a view to covering the flank of the main body in its advance on Epsom, he is to detach a force of—

1 Squadron cavalry,
200 Mounted infantry,
2 Batteries of artillery,
½ Company sappers,
2 Battalions infantry,

to refuse the passage of the Mole to the enemy.

At 10 P.M. you are placed in command of this force, with orders to march from Ashton at daybreak. One battalion and one battery of your force are at Stoke.

4. Write orders for the march, with reasons; and give any other orders you may issue to your cavalry commander. (70 marks.)

5. Calculate the approximate time it will take to concentrate your troops about Esher. Show your calculations. All country roads are practicable. (40 marks.)

6. Show on the map the disposition of your troops on the march at the moment that your infantry battalion from Ashton is just clear of that place. (30 marks.)

7. What system would you advocate with a view to securing safety for a camp in hill warfare against tribes of the North-West Frontier of India? (50 marks.)

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CHAPTER XIII

SCHEMES WITH SOLUTIONS

SCHEME (WITH SOLUTION) No. I., MAP No. I

SPARE MAP IS MAP No. I.a

TACTICS

[3½ hours allowed—250 marks.]

N.B.—When a candidate considers that, in order to answer a question, he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

The *whole* paper should be attentively considered before any single question is attempted.

NOTE.—*Officers are reminded that,* for examination purposes, *it is necessary to state fully the* considerations, *and* reasons, *which influence them in deciding on particular dispositions, particular orders, or particular action.*

GENERAL IDEA

A Red force is marching southwards *viâ* Great Bookham (left top corner of map) and Dorking towards Brighton.

4 Battalions infantry.
1 Regiment cavalry.
1 Battery R.H.A.
1 Company R.E.
1 Bearer company.
1 Supply column.

Its advanced guard (as detailed in margin) has reached Phenice Farm at 12 noon, on the 11th May, and halted for the day. The main body is one march behind.

The enemy (Blue) is reported about 25 miles N.E. of the Beehive (right top corner of map) on the morning of the 11th.

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FOR ALL OFFICERS

1. *Outposts on the 11th May.*

(*a*) As A.G. commander, write out instructions for the "commander of the outposts," pointing out the general line to be occupied, the force to be employed, &c. &c. (25 marks.)

(*b*) As "commander of the outposts," carry out the instructions received; state how your force is distributed: show dispositions on the map; mention any special arrangements deemed necessary for guarding flanks, strengthening piquet posts, or patrolling; and discuss the advantages and disadvantages of the position held. (50 marks.)

FOR LIEUTENANTS ONLY

2. *Reconnaissance.*

(*a*) Write orders for an officer's (cavalry) patrol to start at once (noon, 11th May) to feel for the enemy in the direction in which he has been reported. If found, his strength, position, or direction of march to be ascertained. (25 marks.)

(*b*) As officer commanding the patrol, detail the movements of your party within the limits of the map. Assume that in the neighbourhood of the Beehive you meet Blue patrols. Attach copies of the reports you send in. (45 marks.)

FOR ALL OFFICERS

3. *Night March.*

During the afternoon of the 11th May, the advanced guard is reinforced by the arrival of one battery field artillery, and three battalions infantry; and, at the same time, orders are received for it to move *during the night* across the river Mole, and to occupy a position, facing north, on the high ground in the neighbourhood of Brockham House. The object is to hold this position with the advanced guard until the main body of the Red force has got safely past Dorking.

The nights are clear (without moon) and still.

(*a*) State the preliminary arrangements you (the A.G. commander) would make by daylight to ensure a successful night march. (45 marks.)

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(*b*) Write out detailed orders for the march. (35 marks.)

(*c*) Assuming that all units are to be in the positions assigned to them by 4 A.M. on the 12th May, show briefly the calculations by which you fix the hour for each to start. (25 marks.)

FOR CAPTAINS ONLY

4. *Occupation of a Position for Defence.*

Dispose the troops of the advanced guard for the defence of the position indicated (in the neighbourhood of Brockham House). Explain all your arrangements, and discuss the tactical situation fully. (70 marks.)

N.B.—*In answering all these questions officers should bear in mind the* NOTE *printed at the head of the paper.*

SOLUTION No. I

NOTE.—*All paragraphs in italics are merely explanatory.*

The following assumptions are made with reference to the whole "scheme":—

(*a*) That the inhabitants of the country are friendly to "Red force."

(*b*) That the river Mole is unfordable.

(*c*) That the roads shown on the map are fenced by banks or hedges, and that all arms can, if necessary, move off the roads across the down country.

QUESTION I.(*a*)

Advanced Guard Orders. No. 1, by Brig.-General A. B.

PHENICE FARM,
11*th May* 1897, 12.30 P.M.

I. The enemy were reported by the cavalry to be about 25 miles north-east of the BEEHIVE (which is about 4 miles E.N.E. of this place) at 7 A.M. this morning. Our main body is 10 miles behind us.

II. The advanced guard will halt and bivouac in, and west of, CONICUT WOOD. Commander of the outposts—Lieutenant-

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Colonel C. D. Troops—2 squadrons 1st Hussars, the battery R.H.A., and 4 companies No. 1 battalion, with the machine guns.

III. The general line to be taken up by the infantry portion of the outposts is the eastern crest of PHENICE FARM plateau, and this will be the line of resistance in case of attack, and must be held until the main body of the advanced guard has taken up its position thereon.

IV. Cavalry officers' patrols should be sent to the north-east and east, and endeavour to ascertain if the enemy has continued his advance.

V. Subject to the above requirements, as few troops as possible, both in the cavalry and infantry, are to be employed on reconnaissance and observation duties, the remainder being allowed to rest.

I have inserted Para. V. in Orders because the candidate is reminded, at the beginning of the scheme, that he should attentively consider the whole paper before answering any question. It will be seen further on that the advanced guard, Red force, in addition to its morning march, say 12 miles, has to make a night march to Brockham House, and probably fight early next day. It seems desirable, therefore, to keep the troops as fresh as possible, and as the advanced guard commander has already received information of the enemy on the flank of his line of advance, it is perhaps not unreasonable to suppose that he is in some measure prepared to receive orders, something of the nature which he eventually does receive, later in the day, vide *Question* 3.

VI. Orders regarding the night dispositions of the outposts will be issued before sunset.

VII. The G.O.C. will be found at PHENICE FARM till 2 P.M., at which hour he will inspect the outpost line.

By Order.

Verbally to C.O.'s. (Signed) E. F., *Major*,
Copy to Lt.-Col. C. D. *Brigade Major*,
Advanced Guard, Red Force.

The reasons why I have adopted the eastern edge of Phenice Farm plateau as the infantry outpost line are as follows:—

(*a*) The northern spur of the plateau commands the two

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bridges by the "Priory" within easy rifle range; and the southern spur similarly commands the Pray and Burford Bridges.

(*b*) Although this plateau is commanded by the high ground east of the river, no good line of observation eastwards can be found even there, without going a prohibitive distance, for such a small force, to the front; and if cavalry patrols are out to the east and north-east, and cavalry vedettes placed on the high ground just east of the Priory and Burford Bridges, early information of the approach of an enemy should be obtained.

(*c*) The plateau selected, while giving fair opportunities for observation, also gives an excellent line of defence.

Question I.(*b*)

The distribution of the force is shown on the map in red, and the strength of each unit noted against it.

P. 1. means Piquet, strength 1 company.
S. 1. „ Support, „ „ „

Sentries are concealed behind hedges, &c., or in folds of the ground. As the river is unfordable except at the bridges, *vide* assumption at the beginning of this solution, and as the portion of country between Pray Bridges and the Priory is overlooked from the two spurs of Phenice Farm plateau, a large gap is left between Nos. 1 and 2 piquets, but two companies are kept in support in central positions, but concealed from view, ready to move to any threatened point.

The battery is in position where shown, and has taken the ranges to likely hostile artillery positions, as these are out of effective rifle range from the eastern edge of the plateau. *This is one of the special cases in which "Combined Training," section* 105, 1, *iii., recommends the employment of artillery on outposts.*

The troop of cavalry (*quarter squadron*), with the infantry, furnishes a few orderlies to each support, and sends a patrol up the London Road, and also a patrol, every two hours, to Denbie's Hall. All the main reconnaissance is done by the cavalry, which has one squadron at the Priory and three troops south of Pray Bridge.

These squadrons have been placed here because the arrangements for watering horses are probably more convenient than on the plateau itself, patrols going from them and returning to them will be less exposed to view from the east, and will have less distance to go, and they will be quite secure from surprise if they

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temporarily barricade the bridges, have vedettes on the east side of the river, and patrols to the east and north-east, feeling for the enemy.

As regards the security of the flanks, Nos. 1 and 3 piquets seem well placed for guarding the right and left flanks respectively; additional security is afforded by the patrols sent to Denbie's Hall on the right flank, and up the London Road on the left flank.

No very special arrangements for strengthening piquet posts seem necessary by day, as the enemy were 25 miles north-east of the Beehive early in the morning, or nearly 30 miles distant from Phenice Farm, and therefore no serious attack could well be made before nightfall, when the piquets would be advanced towards the river Mole to guard the bridges.

As stated above, the cavalry squadrons might be given orders to barricade the bridges in their front, and if an attack were made on the bridges, the infantry piquets would be pushed forward—No. 1 piquet to the position of the three-quarter squadron, No. 2 piquet to the position of its most advanced double sentry, and No. 3 piquet to the eastern edge of Updown Wood. In all probability natural cover exists at all these three places, which might require a little artificial improvement, and if not, shelter trenches might be made.

Machine guns would be very useful for keeping these bridges and these barricades under fire, and the artillery will, of course, be of immense assistance.

As regards patrolling, the patrols sent to the right and left flanks have already been described, all the patrolling to the east and north-east will be done by four small cavalry officers' patrols.

The sentries furnished by the infantry piquets are merely to watch for any signals from the cavalry in their front.

As regards the advantages and disadvantages held, these appear about equally balanced.

Advantages

The infantry outpost line runs along a well-defined feature, viz. the eastern edge of Phenice Farm plateau.

The river line forms a good obstacle all along the front, and the piquets can quickly be moved forward to positions whence they can bring an effective rifle fire on the river crossings.

Updown Wood forms a strong protection to the left flank.

There is apparently good natural cover, behind which all the various units of the outposts and the camp of the main body are concealed.

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DISADVANTAGES

The right flank is commanded from the high ground by Denbie's Hall; but as the enemy's line of advance is north-east of the Beehive, a wide turning movement would be necessary to enable him to reach this position, and such a movement could easily be foreseen and forestalled.

The whole of Phenice Farm plateau is commanded from the high ground east of the river Mole, which offers good artillery positions to the enemy, though at a range of nearly 4000 yards from the camp, and ample warning of the approach of hostile batteries should be procurable, and our own battery should be ready to open fire on the hostile guns the moment they are past.

An enemy's cavalry patrol could, if it broke through the Red cavalry patrols, gain an extensive view of the position from the high ground east of the river Mole.

I have put one-half battalion of infantry on outpost duty, as a very strong support to the cavalry, because I assume that the enemy were reported 25 *miles north-east of the Beehive* very early *in the morning; and that he may have, during the forenoon, made a march of* 12 *to* 15 *miles, and that, if strong in cavalry, and supported by horse artillery and mounted infantry, he might push a force of these arms on and seize the river Mole crossings, if these are not strongly held. It would, on the other hand, be, I think, quite reasonable to assume that the enemy is* not *within striking distance, and in that case about* 2 *companies of infantry acting as supports to the cavalry would be quite sufficient; the cavalry doing all the reconnaissance and the protection being left to the infantry. In detailing* 4 *companies of infantry as I have done, while all the reconnaissance is left to the cavalry, the protection afforded by the infantry and artillery is doubly strong, and the infantry, especially those in support, derive as much rest as if with the main body, and so does the battery to a large extent.*

QUESTION II.(*a*)

From the Commander of the Outposts, Red Force.

To the Officer Commanding 2 Squadrons 1st Hussars on Outposts.

CRABTREE COTTAGE,
11th May 1897, 1 P.M.

I. You will at once despatch an officer's patrol to reconnoitre up to and beyond the BEEHIVE in a north-easterly direction.

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II. Information is required as to whether the enemy has continued his advance, and if so, in what direction. He was reported to be 25 miles north-east of the BEEHIVE at 7 A.M. this morning.

III. If this patrol reports all clear as far as the BEEHIVE, you will establish a "connecting post" at that point.

IV. The patrol should return by dusk.

V. The frequency of reports is left to the discretion of the patrol commander; reports to be sent to you at the PRIORY, and on to me at CRABTREE COTTAGE.

VI. If all is clear of the enemy up to 10 miles north-east of the river MOLE, a report to that effect should at once be sent in.

(Signed) C. D., *Lieut.-Col.*,
Commander of the Outposts.

The O.C. the 2 squadrons of cavalry will decide, of course, on the strength of the patrol, and he will probably give directions as to rations and forage, &c.

QUESTION II.(*b*)

I copy the instructions in my note-book, and see that I am in possession of a map, pencil, forms of report, compass, &c.

I compare my watch with that of the commander of the cavalry on the outposts and carefully study the map of the country.

When my patrol is ready, I inspect them, see that they are in all respects fit for the work, that there are no loose shoes, and I then explain to all of them what is wanted, and how I propose to act.

I will assume a N.C.O. and 7 men have been placed at my disposal, and the formation I adopt is this: the N.C.O. and 1 man precede me by about ¼ mile as a "point"; a right and left flanking party of 2 men each move about the same distance away from me on each flank; I follow in the centre with 1 man; and the remaining man rides about ¼ mile in rear of me to carry back information in case I am cut off.

[This distance of ¼ mile is, of course, dependent on the ground. It must always be within "seeing distance."]

As I am advancing in a straight line and along the high ground south of Clerkley Wood and between the Priory and

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the Beehive, my "advanced point," in clearing the southern edge of the wood mentioned above, and my left flanking party in moving north of the same wood, both report an enemy in sight. I ride up to the advanced point which has halted, and as I cannot see from this point how strong the enemy is, I signal to the scouts on the flanks to move further round to the flanks.

The two scouts on the right flank move along on Headley Heath, and signal from there to me that the enemy is retiring. The advanced point then pushes on, and on reaching the Beehive, an officer and two men are seen retiring in a north-easterly direction.

The "connecting post" is approaching, I write a report to the effect that I have encountered at the Beehive a hostile cavalry officer's patrol, three in number, send it back by one man of the connecting post, and move rapidly on to try and maintain touch with this hostile patrol.

Copy of report as below: —

"*No.* 1.
"*From* Lieut. S. T.,
"1*st Hussars.*
"*Place*, THE BEEHIVE.
"*Despatch*, 2.30 P.M.

Date,
To Major H. D.,
1*st Hussars.*
Place, THE PRIORY.
Receipt, h. m.

"Hostile cavalry patrol, 1 officer, 2 men, encountered near here. Personal observation. They are retreating N.-East. I am following them. S. T., *Lieut.* 1*st Hussars.*

"Please send back messenger."

QUESTION III.(*a*)

The following would appear the most important *preliminary* arrangements necessary:—

The force now practically consists of a division, less one battalion and one battery of artillery; and I will assume that Colonel G. H. is placed in command of the original brigade which first arrived, and which I will term "No. 1 brigade"; and that Brig.-General I. K. arrived in command of what I will term the "second brigade."

1. As far as is possible from the map (*in all European warfare it may be assumed that at all events small-scale maps of the country are available*) select two roads to march by, one for the infantry, which by night is the only combatant force available, and the other for the cavalry artillery, baggage and train, field

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hospital, &c., with its accompanying infantry escort. This second road will be the one farthest from the enemy, and will thus render the force marching on it less liable to an attack by night, and to the consequent confusion which would result therefrom.

2. Send the brigade major second brigade, and two other officers to be selected by him, to reconnoitre the infantry road, and two specially selected officers from the battalion which will accompany the mounted arms column to reconnoitre the other road. These officers will want suitable escorts.

It is most important to send at least two officers on a special duty like this. If one officer only were sent he might meet with an accident, either during his reconnaissance or when guiding the column on its march.

An instance of this occurred in the 1815 *campaign, when Soult, who was chief of the staff to Napoleon, sent one officer only to order Vandamne's Corps to advance on Charleroi the following morning. This officer fell and broke his leg, and Vandamne never got the message; consequently great delay resulted the following morning, and one Prussian corps was able to greatly impede the French advance till darkness set in.*

3. Direct the brigade major, second brigade, to report fully on the Brockham House position, so that it may be settled beforehand where each unit is to go, and the troops thus march straight into position.

4. Direct the commander of the outposts to let no one pass through the outpost line to the east after the orders for the night march are issued. This is with a view to keeping the march secret, as, even if the inhabitants of the country are friendly, the danger of spies must always be guarded against.

5. Direct the outpost commander to send cavalry patrols out to the north-east and east, or in whatever direction the enemy has been ascertained to be, in sufficient time to allow them light to return by; if these patrols reach to a distance of ten miles to the front and all is reported clear, there will be but small probability of the march to Brockham House position being molested in any way. Two fresh squadrons may, if the O.C. 1st Hussars desires it, be detailed for outpost duty, the other two squadrons being relieved.

6. Direct the outpost commander to move, after sunset, the infantry piquets down to the river line, holding the four bridges previously held by the cavalry; and to establish a line of cavalry "standing patrols" well to the east of the line running north from the Toll Bar (near Brockham House), to the Beehive and north-

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east of the Beehive. The map is not sufficiently extensive for me to select the line.

7. Send reliable guides who are well acquainted with all the country roads in the vicinity, but induce them to think your march will be on Dorking.

8. Have tracings of each road prepared on luminous paint cards and general compass directions taken.

These appear to be the main preliminary steps necessary, and unless there are good reasons to the contrary, I think it would be well to keep the fact that the night march is contemplated an absolute secret; and though the orders which follow are issued at 6 P.M., they should be strictly confidential, and not made known till midnight. Paragraph III. would need to be acted upon at dusk; but no reasons need be given for the various measures.

QUESTION III. (*b*)

Confidential

Advanced Guard. Orders No. 2, by Brig.-General A. B.

PHENICE FARM,
11th May, 6 P. M.

I. Reliable information has been obtained by the cavalry that the enemy's advanced guard is now halted about 12 miles north-east of the BEEHIVE. [*This assumes the enemy marched* 13 *miles that morning.*]

II. Instructions have been received from Army Headquarters that the advanced guard, Red force, now reinforced by three battalions 2nd brigade and one battery R.A., is to move to-night, and take up a position, facing north, near BROCKHAM HOUSE, to cover the movement of the main body past DORKING.

III. A line of cavalry "standing patrols" will be established east of the line OLD TOLL BAR, HEADLEY HEATH, and north-east of the BEEHIVE; and the infantry outpost line will be advanced to the line of the river MOLE, guarding more especially the bridges at the PRIORY, and PRAY and BURFORD BRIDGES. No inhabitants are to be allowed to pass through the outposts. The commander of the outposts will send back to join their regiment all the cavalry under his orders which is not required for "standing patrol" and orderly duties, as soon as the cavalry reconnoitring patrols return.

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IV. Two roads will be used for the night march. No. 1 road is assigned to No. 1 column, consisting of all the infantry, less No. 4 battalion 1st brigade. It is from PHENICE FARM across the river, taking the first turn to the right after crossing, and following the road which runs due north of BROCKHAM HOUSE to a point 400 yards east of the OLD TOLL BAR. No. 2 road is assigned to No. 2 column, consisting of No. 4 battalion 1st brigade, the cavalry, artillery, R.E., and all second line transport and the field hospital and train. This road is from the south-east edge of CONICUT WOOD, and runs due south of, and nearly parallel to No. 1 road, as far as a point about 400 yards south of BURFORD BRIDGE, and thence by PIXHOLME MILL to the bridge due south of BOX HILL FARM, crossing the river, taking the first turn to the right after crossing, and taking again the first turn to the left about 300 yards short of LODGE COTTAGE, and then up the hill to the crest, on which BROCKHAM HOUSE stands.

If a candidate were writing this scheme "against time," it would be a good deal shorter for him to assume that all officers concerned have marked the roads on their maps after a comparison with the brigade-major's map, e.g. *No. 1 road in red, and No. 2 road in black. Instead, then, of describing each road by the names of places, he might simply say that No. 1 road is marked on the map in red, and No. 2 road in black; maps to be compared with the brigade-major's.*

It is, however, very important when this could not be done, e.g. *when units are quartered some distance away from the staff officer issuing the orders, to describe a road so minutely that no mistake can occur as to the road intended.*

The distance by No. 1 road is 8100 yards, and by No. 2 road 9100 yards.

No. 1 column will move off in column of route, No. 2 brigade leading, at 1.20 A.M. Pace about 2 miles per hour.

The G.O.C. second brigade will detail a suitable advanced guard to the column, also stationary flank guards for the branch roads to the north after crossing the river. The head of the advanced guard should reach the first halt, viz. a point on the road 200 yards south of BURFORD BRIDGE, at 2.15 A.M., and there establish communication with the head of the advanced guard of the other column, and move on again, if communication is established, at 2.30 A.M., arriving at destination, viz. 400 yards east of the OLD TOLL BAR, at 4 A.M., and there halt.

No. 2 column, consisting of No. 4 battalion 1st brigade, and all other troops not detailed for the first column, and the baggage columns and train, the whole under the command of Colonel

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L. M., No. 4 battalion, will parade under that officer's orders south of CONICUT WOOD, and march off at 1.20 A.M., pace about 2½ miles per hour, and the head of the advanced guard should reach the point on the road about 400 yards south of BURFORD BRIDGE at 2.15 A.M., establish communication with No. 1 column, and move on at 2.30 A.M., if communication is established. It will then continue its march till the bridge south of BOX HILL FARM is reached, and here a second halt will be made, till a report is received from No. 1 column that the BROCKHAM HOUSE position is clear; the second column, except baggage and train and field hospital, will then cross the river and move up on to the crest of the position and there halt and await orders.

The commander of the outposts will make arrangements for withdrawing the outposts from north to south, so as to take his place in rear of No. 1 brigade, when that brigade is passing BURFORD BRIDGE.

In case of attack on the march, the column will halt. No firing is to take place without orders from commanders of units.

The attention of all is drawn to the orders regarding night operations in *Combined Training*. Strict silence must be observed, and any orders it is necessary to pass down the column will be passed by officers *only* and in as low a tone as possible.

No. 2 brigade will halt when its rear is 200 yards clear of the LABOURER'S COTTAGE, and No. 1 brigade when its head reaches the cottage above mentioned. Orders regarding outposts and the disposition of troops will be issued on arrival.

The brigade major, 2nd brigade, will be responsible for guiding No. 1 column, assisted by the officers who reconnoitred the road with him; and the senior officer, No. 4 battalion, 1st brigade, who reconnoitred the road, will guide the second column.

V. Wheeled transport of No. 1 column first line will follow in rear of the brigades. The second line transport, ammunition and supply columns, and field hospital will not cross the river with No. 2 column, but will halt south of BOX HILL FARM BRIDGE. The O.C. No. 2 column will detail a suitable escort for their protection.

VI. During the march the G.O.C. will be found at the head of the main body, 2nd brigade, and after arrival, at the LABOURER'S COTTAGE.

By Order.

(Signed) N. O., *Major, A.A.G.,*
Advanced Guard, Red Force.

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Reasons and Considerations

Infantry only have been taken by No. 1 road, as not only will the other arms lengthen the column, but they would be useless at night, and the artillery and train will make a considerable noise and might be heard by the enemy's patrols.

No. 2 column is not allowed to cross the river at Box Hill Farm Bridge till the infantry column has gained the position, because the cavalry and artillery can effect no good till daylight, and the enemy may oppose the march. All baggage and train, &c., are kept south of the river, because if a retreat is necessary from the Brockham House position on Dorking, they might block the presumably narrow crossing at Box Hill Farm Bridge.

It would not be possible in the three and a half hours allowed to answer this scheme in detail and to give reasons for every disposition. The examiner would probably be satisfied with the main reasons, and the reason for most of the minor details is apparent.

No. 2 column is given the rate of 2½ miles an hour, as it is not marching on the exposed flank, and, moreover, it consists almost entirely of mounted troops, to whom the pace of 2 miles an hour would be most fatiguing.

It is perhaps a moot question whether the outposts should not have been left in position to guard the river crossings till the main body arrives next day, vide *Question* 3; *but, on the other hand, as that portion of the river is only a small section of its length, the main body will presumably provide other troops for its own security during the march, and the orders seem clear that the whole force is to go to the Brockham House position. If the O.C. advanced guard felt any doubt in the matter, he would probably ask for further orders on this point.*

I have not mentioned the distribution of troops in the Orders, because Question 3 (*b*) *requires orders for the march merely.*

It could, however, have been embodied in a few sentences, because the march, and halts on the position, have been so arranged as to admit of troops easily taking up their positions.

Question III. (*c*)

It will be found very convenient, and, in fact, almost essential, to have a map-measuring wheel for measuring distances along roads on

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maps. The wheel is run along the road to be measured and then run in the reverse direction along the scale of the map. In this way the exact distance is very quickly obtained.

The previous question about the orders for the night march could not well have been answered till the calculations of the distances and times of starting had been made.

No. 1 road, for No. 1 column (2 brigades infantry).

From Phenice Farm to first halt, viz., south of Burford Bridge, 3100 yards, or about 1¾ miles. Leave 1.20 A.M., arrive by 2.15 A.M. Leave 2.30 A.M. Pace about 2 miles per hour, or a little less.

From first halt to destination, 5000 yards, not quite 3 miles. Leave 2.30 A.M., arrive 4 A.M. Pace about 2 miles per hour.

No. 2 road, for No. 2 column.

From Conicut Wood to first halt, south of Burford Bridge, 4000 yards, or a little more than 2¼ miles. Allow about 2½ miles per hour. Leave 1.20 A.M., arrive 2.15 A.M., and leave again 2.30 A.M.

Next distance to destination, 5100 yards, not quite 3 miles. Allow 2 miles per hour, including a halt of about 10 minutes south of Box Hill Farm Bridge. Leave 2.30 A.M., arrive 4 A.M. Pace about 2½ miles per hour.

I have stated in the answer to the previous question my reasons for taking No. 2 column at a quicker rate than 2 miles an hour.

QUESTION IV

The disposition of the troops is shown on the map.

Under modern conditions, which will admit of a battalion in first line occupying some 800 yards of front, the position, *i.e.* so far as the limits of the map permit of one's judging of it, is much too cramped for the force. The best plan seems to me to be, to place one battalion of each brigade in firing line, and to throw one battalion forward to hold the wood as an advanced post, facing east; this will leave 4 battalions in general reserve, but as the right flank of the position is peculiarly liable to be turned, the position might be extended to the right and made strongly defensible if the ground permitted of it, a sufficiently strong general reserve being still maintained.

The firing line of each brigade is shown as occupying the banks of the road running along the front of the position, with

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supports and local reserves, the general reserves are placed behind the crest of the hill for cover from view and fire. The right flank being weak is strengthened by shelter trenches or a field work. If a field work is made, the company R.E. could assist, and in any case they could place Brockham House in a state of defence.

Banks and hedges, and as much of the wood in front of the position as is possible in the time, are levelled.

The battalion on outposts, which, it is presumed, would be posted at daylight, would occupy various advanced posts with its piquets, and delay the enemy's advance; but in the disposition of troops on the map the outposts are assumed to have come in. It would probably be convenient for No. II. battalion, which eventually occupies the wood in front, to furnish the outposts.

The two batteries are massed, and have steeply falling ground in their rear, and gentle slopes in front. Being placed just behind the crest of a hill and with a hedge in front of them, and no conspicuous object near them, their position should be a difficult one for the enemy to range upon.

The map shows them rather too much on the crest, they are intended to be just behind the crest.

They also, from this position, enfilade two main lines of approach; but can, if necessary, be quickly moved to one flank or the other behind the crest of the ridge and unseen. I can see no object in this case in splitting up the batteries. I presume they will fire by indirect laying, and thus the guns and detachments will be well out of sight.

Three squadrons of the cavalry are shown behind the right flank concealed, this being the most exposed and dangerous flank; the other squadron is shown behind the left flank. From both flanks the cavalry would have reconnoitring patrols out till the last moment.

The tactical situation appears to be as follows:—

Up to the afternoon of the 11th May, Red force in question was merely the advanced guard of a force moving southwards on Dorking, but is suddenly reinforced and ordered to protect the flank of its main body. It thus becomes a stationary flank guard or a detached force, and its rôle evidently is to hold the Brockham House position *á outrance*, to protect its main body, till the latter has passed Dorking—after which it will in all probability gradually withdraw as a rear guard.

The day before, Blue force was apparently advancing in a

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south-westerly direction, *viâ* the Beehive, with the presumed object of taking Red force in flank, or possibly of cutting his line of communications. Blue force, if he persists in continuing his march south-west, will have to cross the front of the detached portion of Red force in position round Brockham House; and unless Blue force detaches a strong "containing" force, his own line of communication is threatened from Brockham House. It is therefore unlikely that he will do this, but will try (1) either to attack in front with superior force, and drive in Red force and push them into the river, or (2) work round by the east and attack their right flank. As time is of object to him, in order to harass the main body (Red) as it reaches Dorking, it is probable he would follow the second course, as if successful he would have an excellent position, whence he could command Dorking by artillery fire. Blue cavalry will, however, in all probability, gain information early on the morning of the 12th May of the force round Brockham House, and if the intention of Blue commander is to engage Red force main body, and not merely cut his line of communications, it would appear probable that he will then change the direction of his march and make for Dorking.

In the latter case, the flank guard of Red force on the Brockham House position appears well placed, more particularly if the right flank has been strengthened, but the position might with advantage face more to the north-east, and be much more extensive.

On the whole, the strategical advantage is perhaps rather on the side of Red force, as Blue force, to cut Red's line of communications, will expose his own first, unless he either detaches a strong "containing" force, or makes a wide movement to the north.

If Blue wishes to anticipate Red main body in reaching Dorking, the flanking force (Red) on Brockham House Hill should considerably delay him.

This scheme is, I think, much more difficult than the average tactical promotion schemes; and the question of how best to conduct the night march more especially, admits of great differences of opinion. If candidates, however, give their reasons for their dispositions, and their reasons are based on common sense grounds, the examiner, as is stated at the head of each paper, will allow for such differences of opinion.

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SCHEME WITH SOLUTION, No. II., MAP No. II

SPARE MAP IS MAP No. II.*a*

TACTICS

[Three and a half hours allowed—250 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

The *whole* paper should be attentively considered before any single question is attempted.

NOTE.—*Officers are reminded that*, for examination purposes, *it is necessary to state fully the* considerations *and* reasons *which influence them in deciding on particular dispositions, particular orders, or particular action.*

GENERAL IDEA

A Red force is following a retreating enemy (Blue) in a north-easterly direction from Taplow (left bottom corner of map), *viâ* Borton, Stoke, and Frimley, towards London. Its advanced guard, strength as per margin, reaches Borton at nightfall. Its march during the day has been harassed by the enemy's light cavalry, but no infantry or guns have been encountered.

- 4 Battalions infantry.
- 1 Regiment cavalry (4 squadrons).
- 1 Battery horse artillery.
- 1 Company engineers.
- 1 Bearer company.
- 1 Supply column.

1. OUTPOSTS BY NIGHT—FOR ALL OFFICERS

Describe your arrangements at Borton for security during the night, and show dispositions on the map. (50 marks.)

2. ORDERS FOR AN ADVANCE—FOR ALL OFFICERS

Write out orders for the advance of the advanced guard to be resumed the next day. Detail must show reconnoitring arrangements, routes, order of march, &c. Give briefly reasons for the dispositions made. (60 marks.)

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3. Rear Guards—For all Officers

Assume that the commander of the retreating (Blue) force decides to fight a rear-guard action on the ground between Frimley and the river Yare. Strength of Blue rear guard: 3 battalions infantry, 2 squadrons cavalry, 1 battery field artillery, and 1 company engineers.

Choose a position for the purpose specified, in the locality indicated. Define it exactly. Place your troops on it. Explain all your arrangements for strengthening it, and your orders to the troops; and discuss fully the advantages and disadvantages of the position occupied. (80 marks.)

Note.—Not more than *two* of the bridges over the Yare may be destroyed.

4. Attack on a Position—For Captains

As Red advanced guard commander, assume that you advance from Borton (where you spent the night) and find Blue rear guard in position (selected by yourself—*vide* your answer to Question 3) to the north of the river Yare. You decide to attempt to force the passage, and attack it. Detail all your dispositions to carry out this determination, from your reconnaissance of Blue's position to its (assumed) successful accomplishment. (60 marks.)

5. Retreat from a Position—For Lieutenants only

Upon what principles does a rear guard occupy, hold, and retreat from a position? Illustrate your answer as regards retreat by reference to the manner in which you as Blue rear guard commander would, when pressed by Red, retreat from the position taken up by you in answer to Question 3. (60 marks.)

SOLUTION No. II

Note.—*All paragraphs in italics are merely explanatory*

Question I

The tactics of an advanced guard pursuing a retreating force should generally, more particularly if the enemy has been defeated, be characterised by extreme boldness. It is extremely

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important in such a case, when every effort must be made to keep the enemy in retreat and prevent his reforming, to secure a good rest to the troops of an advanced guard when a halt for the night is made, and as a rear guard to a retreating force is extremely unlikely to adopt the offensive and make a night attack, an advanced guard would usually be able to reduce its outposts by night to a minimum.

In this case, however, the above conditions do not altogether apply.

The General Idea makes no mention of Blue force having been defeated; and though he is retreating, and therefore presumably his *morale* is not as good as that of Red, nevertheless Red cavalry has been harassed by that of Blue, and has not succeeded in gaining touch with his other arms at all.

The commander of Red advanced guard is therefore ignorant as to whether he has merely a rear guard in front of him, or whether, on the other hand, the whole Blue army may not be concentrated east of the river Yare, and therefore rather stronger outposts than would ordinarily be the case seem necessary. I presume that when it is stated in the General Idea that Red *advanced guard* has reached Borton, *at nightfall*, that the *main guard* of the advanced guard is intended, and that the vanguard, say the regiment of cavalry and one battalion of infantry, had reached the crossings over the Yare in the case of the cavalry, and the high ground east of Borton in the case of the infantry.

I decide, therefore, on detailing the battalion of infantry already on the vanguard, and 2 troops of cavalry for night outpost duty; the remainder of the cavalry joining the main guard.

The disposition of the outposts is shown on the map in red. The cavalry forms a line of "standing patrols" in front of the infantry piquets. No. 3 piquet and No. 3 support are stronger than the others, as they are on the most direct line of attack, should the enemy attempt a counter-stroke at night. No. 4 piquet holds Tilford with a support and reserve close behind, because it seems most important to secure at all events *one* bridge over the river from destruction, in case the enemy continues his retreat the next day and destroys the Yare bridges nearest to him in order to check pursuit.

If the whole paper is read before this question is answered, it will be seen that this is the course the enemy does take.

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It is perhaps a question whether a half-battalion of infantry would not have sufficed for the outposts, by making No. 3 piquet and its support one company instead of two, and by dispensing with the reserve, the main guard being so close; but, on the other hand, the three companies on reserve should get as good a night's rest as the main guard, and should an attack be made they are immediately available, and under no circumstances should any risk be run of the enemy seizing Tilford during the night and destroying the bridge there.

The cavalry standing patrols should not cross the river Yare, the infantry piquets should send patrols up to them.

A few cavalry as orderlies are attached to each piquet. The main guard infantry bivouacs in, and *east* of, Borton; but the cavalry and artillery, transport, supply column, and bearer company, with a small escort, *west* of the river, as in case of a night attack on Borton they will be out of the way; and though a night attack is improbable, the General Idea states no touch has been got of the enemy's infantry, so it seems wise to be prepared for such a contingency.

Question II

Advanced Guard Orders
No. 2 by M.-Genl. A. B.

BORTON,
20th May 1897, 10 P.M.

Independent Cavalry.
1st Hussars (less ½ squadron).

I. During the advance to-day, our cavalry has been in touch with the enemy's cavalry, and was checked at nightfall at NEW BRIDGE and STOKE; but neither his artillery nor infantry have been encountered.

Vanguard.
O.C. Lt.-Col. C. D.
1 troop, 1st Hussars.
No. 2 Bn.
1 Co., R.E.

II. The G.O.C. intends to continue the advance to-morrow *viâ* LARRY, STOKE, and FRIMLEY.

Main Guard.
In order of march.
½ troop, 1st Hussars.
No. 3 Bn.
No. 1 Battery, R.H.A.
No. 4 Bn.
No. 1 Bn., less 1 Co.
Baggage and Bearer Co.
Supply Column.

III. As it is most important to ascertain the strength and movement of the enemy's artillery and infantry, the main portion of the independent cavalry should be sent to reconnoitre by the high ground north of TILFORD and SION CHURCH WOOD; and by the line LONG HILL BATTLE COMMON, parallel to the main line of advance, moving at 5.45 A.M.

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Rear Guard.
1 Co., No. 1 Bn.
½ troop, 1st Hussars.

IV. The vanguard should march off at such a time as to be clear of LARRY by 6.30 A.M.

V. The main guard will start at 6.30 A.M. from the FORGE south of BORTON. The commander of the outposts will order the cavalry standing patrols to join the vanguard cavalry, and will withdraw the infantry outposts to take their place in rear of the column as soon as the cavalry of the vanguard has reached the line held by them, and reported all clear up to the river YARE.

VII. The rear guard will follow 200 yards behind the baggage.

VIII. Troops will be given hot coffee and biscuits before starting. One day's cooked rations will be carried.

IX. These orders are liable to alteration if further information of the enemy is received, or if the bridge at STOKE is destroyed by the enemy.

X. The G.O.C. will march at the head of the main guard.

By Order,
(Signed) E. F., *Major*,
Brigade-Major,
Advanced Guard, Red Force.

Dictated to Adjutants and representatives of units.

Brief Reasons for Dispositions Made

I continue my march *viâ* Stoke and Frimley, because that is the road indicated in the General Idea.

I tell the advanced guard commander to use the cavalry in reconnoitring the high ground on both flanks of the line of advance, because that ground is well suited for cavalry, an extensive view is obtainable, and only a very small force of cavalry is necessary with the vanguard on the low ground about Stoke.

I do not suggest to him to send 2 squadrons to the right and 1 to the left, retaining the remainder, because I do not wish to hamper him, and as Colonel C. D. is a cavalry officer, it should

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be quite sufficient to tell him what is wanted and leave him to carry it out in the best manner.

Most officers who have little or no practice in writing orders are apt to make the mistake of fettering their subordinates by telling them not only what *they want done, but* how *to do it; and especially so in the case of their artillery and cavalry commanders.*

One battalion of infantry, or one-quarter of the whole infantry, is placed in the vanguard; the idea being to keep tactical units unbroken.

I allow the vanguard to get about one mile ahead of the main guard, because if, as I expect, the bridge at Stoke is destroyed in the night, I have no intention of trying to repair it under fire, but with the main guard I shall march *viâ* Tilford, and thus turn the enemy's flank.

I will explain my reasons for this in Question IV.

For a similar reason I myself march with the main guard and not with the vanguard, although under normal circumstances I should be with the latter.

The troops in the main guard are not formed all together prior to marching off, but "tail in" to their places in column of route to avoid fatigue to the men.

The battery is nearly at the head of the column, but with some infantry ahead of it, and is thus secure from surprise on the march and yet easily available.

It is not in the vanguard, because the advanced guard is a small one, and because the cavalry will be much split up for reconnoitring purposes.

Second line transport and supply column follow in rear; but if an action seems probable, they will be left behind in Borton under an escort to join the main body baggage.

The last paragraph is added in the orders because I am quite prepared to hear in the night that some of the Yare bridges, at all events, have been destroyed, hence I tenaciously adhere to Tilford, so that I may march by that flank if necessary.

Question III

The position chosen is on the spur commanding New Bridge and Stoke Bridge, and troops are shown in "black." I have decided on destroying these two bridges (*I am limited to* two, *vide note*), because they are in the enemy's most direct line of advance,

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and he must either repair one of them under fire or make a detour *viâ* Tilford or Rondal. Either of these courses will delay him in a greater or less degree, and the chief object of a rear guard is to gain time.

The position selected, moreover, is astride my direct line of retreat, and I am not obliged to form front to a flank.

The disposition of the troops is shown on the map.

No. 1 battalion is allotted to the defence of New Bridge; No. 2 battalion to the defence of Stoke Bridge, with an advanced post in Stoke.

Half No. 3 battalion is kept in reserve temporarily, with orders to be in readiness to move either up to the right flank by Sion Church Wood, if the main attack is from my right flank; or to take up a position between Nos. 1 and 2 battalions, if the attack is direct; or to move down to Rondal and the spur above it, if the main attack is on that flank. Of the remaining companies of No. 3 battalion, 2 companies are detached to the right flank and 2 to the left, to back up the cavalry, assisted on each flank by a section of the battery.

The commanders of Nos. 1 and 2 battalions have received orders that the defence of New Bridge and Stoke Bridge respectively is their duty.

The guns in the centre have alternative epaulements on the spur between Nos. 1 and 2 battalions, with orders to fire down whichever of the two direct roads the enemy is seen to be approaching by, and to force an early deployment.

The epaulements are constructed just behind the crest of the hill; the artillery in the centre probably fire by indirect laying; and in all cases are kept well concealed.

Of the cavalry, 1 squadron is sent to the right flank to watch for and report any turning movement; the other squadron has a similar duty on Long Hill, and will retire by Rondal Bridge, with instructions, if driven in by a superior force of cavalry, to help to prevent the bridge being forced. It will then either continue to watch for a turning movement on the left flank or reinforce the other squadron, according to circumstances. Both squadrons will probably act dismounted when their reconnaissance is complete, and, backed up by infantry and guns, should materially delay turning movements.

The company R.E. is sent back to Frimley, with orders to begin preparing the outskirts for defence, in which the inhabitants, if Blue is in a friendly country, will assist. Frimley will thus form a second position on the main line of retreat.

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As regards strengthening the position, No. 1 battalion utilises the bank and hedge in its front, improving it if necessary. The bank and hedge below the gun epaulements is similarly improved, ready for No. 3 battalion. No. 2 battalion makes a shelter trench on the crest of the spur, and prepares the outer wall of Stoke for defence.

The battery prepares alternative gun epaulements on the spur where shown in map, and epaulements are similarly prepared for the machine guns. The duties of the company R.E. have already been described, and they in the night will have demolished New Bridge and Stoke Bridge. Shelter trenches and gun epaulements would probably have been traced before dark, and would be constructed under cover of darkness.

It will probably be impossible in country like this to conceal the shelter trenches entirely from the enemy. If time permits, false shelter trenches might be made or the earth from the real trenches placed elsewhere. Traverses are very important against enfilade fire both in the shelter trenches and epaulements.

Advantages and Disadvantages

The extent of the position, which is about 3 miles, is too large for 3 battalions even on a *rear* guard, where a general reserve may be dispensed with; but, on the other hand, this may help to deceive the enemy as to our real strength. By having the bulk of the troops in the centre and only detachments on the flanks, this great extension is to some extent neutralised.

There is a clear field of fire both for the artillery and the infantry, and very little dead ground, except behind Stoke Hill spur.

There is good cover, especially for the supports and reserves.

The artillery positions are not good; they are in the same line with the infantry, except on the left flank to some extent, and therefore each arm may feel the effects of fire directed at the other. I have sought to neutralise this disadvantage by leaving a wide gap between the infantry and the artillery in the centre. No sufficiently high position in rear of the infantry line exists to enable the guns to be placed farther back.

There is sufficient depth in the position, considering that with the exception of ½ No. 3 battalion temporarily in general reserve, there is no general reserve to conceal.

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There are no roads as lateral communications conveniently situated behind the position, but in all probability the soil is good turf, and renders movement everywhere easy. But one cannot tell what obstacle the brook running from Sion Church Wood forms. In any case this could be temporarily bridged.

The lines of retreat are sufficient. There are two roads, and infantry presumably could ford the Wey Brook anywhere.

There are several good positions for the enemy's artillery, and a position on Long Hill will in some measure enfilade my position besides commanding it.

There is a river running all along the front of the position and presumably not fordable, and therefore of advantage to the defenders, for although it restricts counter-attack, a rear guard seldom can have recourse to anything but passive defence.

Frimley forms, as far as can be seen, a good second position for the rear guard when forced from the first position.

Question IV

I assume that my cavalry standing patrols, which were watching New Bridge and Stoke Bridge during the night, at once sent in information of the destruction of these two bridges. I was therefore able in ample time to cancel the previous orders issued for the march (*vide* Question II.), and my fresh dispositions will depend on the result of my reconnaissance at daybreak. From Borton to Frimley, *viâ* Stoke, is 5½ miles, and *viâ* Tilford, assuming troops can march straight from Sion Church Wood through the Park, is exactly the same distance. [*These distances should be measured with a map road-measuring wheel.*] The distance round by Rondal is, however, very much farther, and the country between Long Hill and Frimley very up and down hill, and therefore fatiguing to troops.

Before, however, definitely committing myself to attack, the reports from the cavalry must be awaited.

I instruct the O.C. 1st Hussars to reconnoitre at daybreak, and I myself accompany the 2 squadrons which he sends by Larry and Long Hill, giving orders that meanwhile the remaining troops should breakfast.

From Long Hill an excellent view of the enemy's position is obtained. It is true a certain amount of time is lost in the G.O.C. himself reconnoitring the position, but, on the other hand,

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Long Hill is very close to Borton; and if my troops are going to fight it is important they should not do so on empty stomachs. I have not lost sight of the fact that this is merely an advanced guard, in which case time is all important, but very little time will be lost, and even that will be utilised by the remaining troops having their morning meal.

The result of my reconnaissance, and of the reports I receive from the cavalry north of Tilford, decide me on making a feint attack with 2 squadrons, the 2 guns R.H.A. and 1 battalion, on Stoke and Rondal; whilst with the remainder of the force I march round by Tilford on Frimley.

It is true my main and flank attack will be separated, but I have probably information by this time as to the enemy's approximate numbers, and an advanced guard with its main body constantly approaching can well afford bold measures, more especially as a rear guard can only remain for a certain time in position, if its main body, as it seems probable in this case, is continuing its retreat.

To attempt to carry New Bridge and Stoke Bridge by a direct attack against an enemy only slightly inferior in numbers, appears not only to be doing exactly what he would wish one to do, but to be running one's head against a brick wall.

From Borton to Tilford my march will be concealed by high ground; with 2 squadrons on each flank I should be able to drive his cavalry in, and prevent them obtaining much information. On the other hand the hostile squadrons will probably fall back on some convenient point of *appui* which they will hold with dismounted fire; and it will be impossible for my cavalry unaided by infantry to dislodge them, unless they can threaten their line of retreat.

However, from Frimley, as far as can be seen from the map, the enemy's line of retreat appears to run NNE., and the Tilford flank not only seems *tactically* the best, but by far the best *strategically*, as if I can only induce him to remain in position long enough, and can gain the ground north of the Park, I shall be on a shorter line to Frimley and the road to London than he is, and therefore seriously threaten his line of retreat.

The movement, therefore, takes place as follows:—

Two squadrons, 1st Hussars, remain in observation on Long Hill, having driven in the hostile squadron on that flank to a position near "The Firs." The 2 guns R.H.A. advance to the 2 squadrons, and come into action enfilading to a great extent

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the position. No. 2 battalion and the company R.E. advance *viâ* Larry to the northern edge of Maharambout Wood.

All the above force is under the command of Colonel C. D., commanding 1st Hussars, with orders to induce the enemy to think that this is the real attack.

I, meanwhile, advance with 1 troop and 4 guns and part of No. 1 battalion and Nos. 3 and 4 battalions, leaving the baggage under one company of No. 1 battalion in Borton to join the main body baggage; and at Tilford the remainder of No. 1 battalion (on outposts) are ordered to join me. Two squadrons, less 1 troop, are in advance by Bare Farm. I march *viâ* Bare Farm, but the enemy has moved up his reserve ½ battalion into the Park north of Garrards Cross, and is evidently aware of the turning movement, but at the same time begins to evacuate his prepared position and retreat on Frimley, his line of retreat being threatened.

I advance in echelon of battalions from the left from Bare Farm, cavalry on the left flank threatening the enemy's retreat from Frimley. Meanwhile, Colonel C. D.'s force presses forward on Stoke, which is untenable under artillery fire; the enemy are all retreating; the R.E. company hastily repairs the bridge at Stoke sufficiently to allow infantry to cross (or, if not practicable, the infantry cross at Rondal), the cavalry and artillery gallop round by Tilford and join the 2 squadrons on my left flank.

The enemy is now in full retreat, and my infantry concentrate North of Frimley, the cavalry and the battery keeping in touch with the enemy.

In conducting the echelon movement on the left flank, it would have to take place well away to the north under fire.

Question V

Briefly speaking, the principles are these:—

It occupies a position on a much wider front than if it were going to fight an action. It may dispense with troops in general reserve, and possibly even with the supports of the firing line.

Its great object is to impose on the enemy and make him think the force much larger than it is.

It will always watch its flanks with cavalry to prevent any attempt of the enemy to pass between it and the main body.

Its artillery probably comes into action at long ranges to compel an early deployment.

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It should take up a position so as to cover its line of retreat and not form "front to a flank."

It holds a position until the enemy has made every preliminary arrangement by deploying, &c., to attack it, and when he has thus caused the enemy to lose time by deploying from column of route, a rear guard usually commences to retreat.

Counter-attacks are seldom resorted to.

It retreats from a position, as a rule, by sending back troops that are not threatened or engaged, to a second position to cover the retreat of the remainder. If its artillery is not under close fire, that arm may remain longer than the infantry, its mobility enabling it to catch up the slower arm.

Its cavalry and mounted infantry should always remain in touch till the last moment.

In this case, as no attack is being made on New Bridge, No. 1 battalion could be withdrawn and retire on Frimley, and north of it, to cover the retreat of the remainder. The company R.E. has already been sent back to Frimley, with orders to prepare it for defence.

The 2 guns in centre which are being enfiladed from Long Hill go back to Frimley to assist No. 1 battalion.

Half No. 3 battalion is moved up north into the Park, with orders to gradually retire on Frimley.

The squadron on the right is reinforced by about 3 troops from the other squadron, and supported by No. 3 battalion; and the guns hold back the main attack, while a troop of cavalry watches the Forge bridge on the left flank.

No. 2 battalion having sent one company to assist the troops in Rondal, the companies of infantry in Rondal and Stoke retire, covered by the remainder of the battalion and the machine guns, and then the whole battalion gradually retires on Frimley. Great care would have to be taken that the retirement of No. 2 battalion was not delayed too long.

The map is not sufficiently contoured in the N.E. corner for me to judge if the neighbourhood of Frimley is well suited as a second position, but in any case, as the enemy has adopted a wide turning movement to the north to threaten my line of retreat, I must retire to prevent being cut off. To gain time was my object, and this has been effected to a large extent by forcing the enemy to make this turning movement.

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SCHEME WITH SOLUTION No. III., MAP No. III

SPARE MAP No. III.*a*

TACTICS

[Three and a half hours allowed—250 marks.]

N.B.—When a candidate considers that, in order to answer a question, he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

The *whole* paper should be attentively considered before any single question is attempted.

NOTE.—*Officers are reminded that,* for examination purposes, *it is necessary to state fully the* considerations *and* reasons *which influence them in deciding on particular dispositions, particular orders, or particular action.*

GENERAL IDEA

On mobilisation, a force, strength as per margin, has been concentrated at Horton (right bottom corner of map). Its instructions are to march to Bagshot Heath (off the map, 15 miles due west of Esher), crossing the river Mole by Esher Bridge. To cover this crossing, the enemy being in the direction of London, N.E. from Horton, the 1st brigade, strengthened by the addition to it of 1 squadron of cavalry, 1 battery of artillery, and a half-company of engineers, is ordered to Ashton, and all the country to the N.E. of that place is to be reconnoitred.

2 Brigades infantry complete (1st brigade and 2nd brigade).
4 Squadrons cavalry.
3 Batteries field artillery.
1 Company Royal Engineers.
1 Divisional ammunition column.
1 Supply column.
1 Field hospital.

FOR ALL OFFICERS

1. Write out precise orders for the march of the 1st brigade, strength as given above, to Ashton, *viâ* Chessington, specifying, among other points, the advanced guard and reconnoitring arrange-

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ments, and the positions to be taken up by units on arrival at Ashton. (50 marks.)

FOR ALL OFFICERS

2. Show on the map neatly the disposition of all the troops of the 1st brigade at the moment when the main body of the brigade is on Chessington Green; and write brief remarks in explanation of order of march, intervals, &c. (60 marks.)

FOR LIEUTENANTS ONLY

3. Place outposts *for the night*, covering the 1st brigade at Ashton. Show dispositions on the map. State strength employed; explain all arrangements, and give copies of any orders issued to piquet commanders or others. (60 marks.)

FOR ALL OFFICERS

4. The force left at Horton (*see* General Idea) starts at 5 A.M., on the day after the 1st brigade marched to Ashton, for Bagshot Heath. Advanced guard: 1 battalion, 1 squadron, 1 half-company engineers. Rear guard, for escort and police purposes only: a half-battalion and 1 squadron. Ammunition column, hospital, and baggage trains, may be assumed to cover 1 mile of road. At what hour approximately will the rear guard be across Esher Bridge? Show order of march, indicate route, or routes, followed, and give brief calculations of time. (80 marks.)

FOR CAPTAINS ONLY

5. The officer commanding 1st brigade believes from his reconnoitrers' reports that he is likely to be attacked before he has time to follow the rest of the division across Esher Bridge. Under the circumstances, he considers his position at Ashton too advanced, and he decides to fall back at once, before he is attacked, to another nearer Esher.

Discuss the tactical situation fully and criticise this decision. In any case indicate a position, or positions, between Ashton and the river Mole, which offers advantages for defence, and show how you would occupy them. (60 marks.)

N.B.—*In answering all the foregoing questions, officers should bear in mind the* NOTE *printed at the head of the paper.*

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SOLUTION No. III

QUESTION I

1st Brigade,
Order No. 15.

HORTON,
1st June 1897, 2 P.M.

Advanced Guard—
O.C. Lt.-Colonel C. D.
1 squadron, 1st Hussars (less 1 section).
No. 1 Battalion.
½ Co. R.E.

Main Body—
In order of march.
½ section cavalry.
No. 2 Battalion.
No. 1 Battery R.A.
No. 3 Battalion.
7 Cos., No. 4 Battalion.
Brigade Ammunition Reserve.
1 Bearer company.
1 Co. No. 4 Battalion.
½ section cavalry.

I. The enemy, strength at present unknown, is reported to be in the direction of LONDON, north-east from HORTON.

II. The 1st brigade, strengthened by the addition of 1 squadron 1st Hussars, No. 1 battery R.A., and half No. 1 company R.E., has been ordered to proceed to ASHTON this evening, and thence to cover the march of the remainder of the division from HORTON early to-morrow morning till it has crossed ESHER BRIDGE.

The route to be followed by the 1st brigade is by the road north of PASLEY HOUSE, *viâ* CHESSINGTON.

III. The advanced guard will march off at such a time as to be clear of the ford on the road north of PASLEY HOUSE at 4 P.M.

The infantry of the advanced guard should continue its march through ASHTON to FARLEY COURT; and throw out by dusk a line of night outposts covering ASHTON on the line from the ford over MILTON BROOK, east of ASHTON, and thence *viâ* FENN'S FARM, ORLEANS ARMS, EWELL, to HARE GREEN; and the cavalry should, after reaching ASHTON, be sent on to reconnoitre for the enemy in a north-easterly direction; returning to FARLEY COURT by nightfall, leaving three standing patrols watching the roads to London.

IV. The head of the main body will march off at 4 P.M. Starting point, western exit of HORTON.

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V. The 2nd Line transport, field hospital, and supply column, will join the baggage of the 2nd brigade.

VI. The Quartermasters of each battalion in the main body 1st brigade, together with an officer from the battery and a N.C.O. from the half company R.E., will report themselves by 3 P.M. to the Brigade Major, and accompany the vanguard of the advanced guard on its march, and, on arrival at ASHTON, they will make arrangements for the billeting and bivouacking of their respective units under the Brigade Major's directions.

All troops in the advanced guard not employed on outpost duty will be billeted and bivouacked in and about FARLEY.

VII. One day's cooked rations will be carried.

VIII. The G.O.C. on the march will be at the head of No. 2 battalion, and on arrival at ASHTON, the brigade headquarters will be at the RED LION INN.

By Order,
(Signed) E. F.,
Brigade Major,
First Brigade.

Dictated to Adjutants and representatives of corps.

Reasons and Considerations

As the main body of the division is to march to Bagshot Heath early the next day, I march off the 1st brigade to Ashton in sufficient time to allow of the outposts being thrown out, and of the cavalry reconnoitring to the north-east before nightfall on the previous evening.

The composition of the advanced guard is a normal one, viz., nearly all the cavalry available and one-fourth of the infantry.

The cavalry is able to go on at a trot and reconnoitre when the vanguard infantry reaches Ashton, because from there all the country is open for some distance and a good view would probably be obtained from the Church Tower.

If the advanced guard infantry go on as far as Farley Court,

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they will be in a central position as a reserve for the outposts, and probably get good night accommodation.

The subject of the outposts will be fully treated in answering Question 3.

The second line transport and field hospital will be a great encumbrance if the 1st brigade has to fight the next day whilst moving across country, they are therefore dispensed with for a day.

As regards billeting and bivouacking in Ashton, the village is conveniently divided by the roads into four sections, as shown on the map, and these would be allotted to units.

The division of the village into sections for this purpose is not touched on in the orders, as the Brigade Major would allot the sections to the Quarter-Masters on arrival at Ashton.

Question II

The disposition of all the troops is shown on the map in red, approximately *to scale*. *To avoid confusing the map, the tail of the main guard is shown west of Pasley House instead of north of it.* The distance between the main body and advanced guard is about the length of the main body, roughly, one mile; the distance between main guard and vanguard is proportionately less, as the smaller body will take less time in deployment.

Of the cavalry, 3 troops are gone out to reconnoitre on three roads, the remainder of the fourth troop following in support on the centre road.

As regards the order of march, the half company R.E. is with the advanced guard, because some of the bridges over the Marley Stream might require repairs or demolition.

The battery, as the advanced guard is so small, is with the main body, but well towards the head of the column, so as to trot on if needed.

The arrangements for the S.A.A. carts, &c., is in accordance with the Regulations, viz., 1st line transport in rear of each unit, remainder of S.A.A. carts, bearer company, &c., in rear of the Brigade.

Question III

The disposition of the outposts is shown on the map in black. Three cavalry standing patrols are left out on the three roads to London, strength, 1 section each. Infantry patrols from the piquets patrol up to them.

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The infantry piquets have been placed so as to guard all main approaches; an advance except by the roads being very improbable at night.

The total strength of the infantry on outposts is 5 companies, the remaining 3 companies of the battalion, with about 3 troops of cavalry and the half company R.E., are available as a reserve, and centrally posted.

The supports are placed so as quickly to reinforce the piquets. An examining post is formed by Nos. 1 and 3 piquets.

A copy of the orders given to the officer commanding No. 1 piquet is given below:—

To Captain A., *No. 1 Battalion, Commanding No. 1 Piquet.*

I. The company under your command will furnish No. 1 piquet on the right of the line, and will be posted at FENN'S FARM.

II. You will furnish a detached post of an officer and 20 men to watch the ford over MILTON BROOK, half a mile South of FENN'S FARM.

III. Your piquet and the detached post will each furnish a group, finding a double sentry, to watch the approaches from the East; and you will also furnish an examining post at FENN'S FARM. No. 2 company is in support to your company, between your piquet and the detached post.

IV. No. 2 piquet is posted at the cross-roads due East of FARLEY COURT, about 600 yards NNE. of your piquet.

V. The cavalry have reconnoitred 8 miles to the North-East on the LONDON road, and have seen no signs of an enemy.

VI. In case of attack, your piquet and your detached post must hold on as long as possible; you will be reinforced both by the support and by the reserve.

VII. FENN'S FARM and the ford held by the detached post should be artificially strengthened; and a reconnoitring patrol from each post should be sent out every two hours, and you should keep up communication with No. 2 piquet.

VIII. If obliged to fall back, do so as slowly as possible on ASHTON.

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IX. A fire for cooking purposes may be lighted in the farm house, but not elsewhere.

X. I shall be at FARLEY, except when I am visiting the piquets in the section of outposts under my command.

FARLEY LODGE,
1st June 1898, 7 P.M.

C. D., *Major, No.* 1 *Battalion,*
Commanding Right Section of Outposts.

It would be convenient to divide the infantry outposts into two sections, each under a field officer, and instructions similar to those given to No. 1 piquet would be given to each piquet and support.

These instructions would probably be given verbally; commanders of units taking written notes.

QUESTION IV

I presume that by the force starting at 5 A.M. is meant the *main body*, and that the *advanced guard* has gained its distance by 5 A.M.

I decide on marching by two routes as far as the cross-roads south of Esher, because as the force is marching to Bagshot *viâ* Esher Bridge, and the enemy is in a north-easterly direction, the movement is a flank march, and possibly in the presence of an enemy. The road taken by the *combatant* portion of the force is marked in red on the map, that taken by the *baggage* in black.

To march by two roads appears to have several advantages, *viz.*:—

1. If attacked on the march, the combatant portion, if it halts and fronts, will be in fighting formation; it will offer a smaller flank to attack, and the baggage will be securely covered.

2. If the attack is being pressed home, the baggage could be sent on and the main body take up a position in Esher to help the 1st brigade to cover the baggage till it has crossed Esher Bridge, and then follow unhampered by any impedimenta.

3. The pace of baggage wagons is quicker than that of infantry, and the baggage can do most of the first part of the march without halting.

The troops with the main body, not including advanced and rear guards are, 1 squadron, 2 batteries R.A., and 2½ battalions.

As the rear guard is for escort and police purposes, I take 2 troops and 2 companies from it to accompany the baggage and

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train till they join the combatant portion of the main body, when they will join the remainder of the rear guard.

To avoid making a long détour *viâ* Chessington with the combatant portion of the column, the main body will move straight across country from X to X. The R.E. with the advanced guard, or infantry pioneers, could very quickly clear enough of the banks or hedges away to allow passage to the guns, and as the ground here is on a spur there is no fear of very heavy or wet "going."

From Horton to the cross-roads, where both columns join, is, by the Northern road, 4 miles, 300 yards, and adding 1650 yards for the length of the combatant column and an allowance for opening out, makes $5\frac{1}{4}$ miles.

Pace, 3 miles an hour.

$$3 : 5\tfrac{1}{4} :: 60 : x = 105 \text{ minutes,}$$

i.e. 1 hour 45 minutes till the rear of the combatant portion, excluding rear guard, is clear of the cross-roads, to allow of the baggage and train column joining in.

Combatant portion starts therefore at 5 A.M., and is clear of the cross-roads at 6.50 A.M., with five minutes' spare.

By the Southern road from Horton to the cross-roads the distance is $5\frac{1}{2}$ miles.

Pace of "train" is $3\frac{1}{4}$ miles an hour, if they do not halt.

$$3\tfrac{1}{4} : 5\tfrac{1}{2} :: 60 : x = 102 \text{ minutes.}$$

That is, the head of the baggage and train columns should arrive at the cross-roads just as the tail of the combatant column is clear.

From this point on, one column is formed; the 2 rear guards combining and forming one column. The length of the column will be—

1 Squadron, 100 men . . .	100 yards.
1 Battalion, 800 men . . .	500 „
1 Battery, 6 guns	300 „
1 Battalion, 800 men . . .	500 „
1 Half-battalion, 400 men . .	250 „
Baggage, &c.	1760 „
Distance between main body and rear guard	440 „
1 Half-Battalion, 400 men . .	250 „
1 Squadron, 100 men . . .	100 „
	4200

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If 10 per cent. is allowed for the infantry opening out on the march, a very moderate estimate, 150 yards more must be added, total length of column therefore will be 4350 yards.

Total distance from Horton to Esher Bridge is 4 miles 300 yards + 1 mile 400 yards = 5 miles 700 yards. To this add the total length of column, including opening out, or 4350 yards = $2\frac{1}{2}$ miles, so that the total distance to be traversed till the whole column is clear of Esher Bridge is about 8 miles.

$$3 : 8 :: 60 : x = 2 \text{ hours } 40 \text{ minutes},$$

and, allowing 20 minutes for a long halt, 3 hours. Therefore, if the column starts at 5 A.M., it should be clear by 8 A.M.

It will be noticed from the map that till the combatant portion of the column and the baggage and train meet, there are many lateral roads by which communication can be kept up.

QUESTION V

The tactical situation appears to be as follows:—

Until the march of the main body begins, and till it has reached to about Claygate, the 1st brigade is acting as a flank guard, but when the main body and the baggage have got to about the "cross-roads" (*vide* map), the rôle of the 1st brigade appears to be becoming that of a rear guard, as it will have to protect not only the right flank of the main body, but also its rear.

Under these circumstances the decision of the 1st brigade commander to fall back on Esher, provided he does so gradually, and prevents the march of the main column being molested, seems very sound.

Were he to remain in position at Ashton till the main body had crossed the Esher Bridge, he would be left in a very isolated position, and give the enemy, especially the mounted troops, an opportunity of interposing between him and the main body.

As the 1st brigade is unencumbered by 2nd line transport, field hospital, or supply column, it should have no difficulty in retreating straight across country by the road marked in black, *viâ* Stoke and Esher, both of which places appear suitable as positions for checking the enemy's advance. The manner in which I would occupy these two places is shown on the map in black. The half-company R.E. will be very useful in helping to make passages through banks and hedges where no road exists.

Nearly all the infantry are shown in firing line, because the

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object is to make the enemy deploy rather than *fight*, and the wider the front occupied the more the enemy is likely to be deceived and delayed.

SCHEME (WITH SOLUTION) No. IV

PART I

Spare Map of River Yare Country, or Map No. II.*a*

General Idea

The vanguard of an advanced guard of a Red force marching North, *viâ* Thorpe and Frimley, has reached Thorpe at 4.30 P.M., 18th July.

The main body is 7 miles in rear of Thorpe.

Strength of advanced guard, including vanguard—

1 Squadron cavalry.
100 Mounted infantry.
3 Battalions of 2nd brigade.
1 Field battery.
1 Supply column field company R.E.
1 Bearer company.

Special Idea

The advanced guard has marched 13 miles. It is raining.

The O.C. advanced guard learns from his cavalry that vedettes of Blue force have fallen back on Long Hill, and from an officers' patrol at Cromer, that Stoke and Rondal are occupied by infantry, probably mounted infantry.

No other information available.

The O.C. advanced guard determines to attempt to secure the passage of the Yare before Blue's advanced troops are reinforced.

The Blue commander is reputed to be cautious, vacillating, and anxious. He is said not to be of active habits.

As O.C. advanced guard, what orders would you issue?

Development of the Situation

Rondal was occupied at 7 P.M. after heavy losses on both sides. Retaken at 7.30 P.M. At 8 P.M. darkness and fatigue put an end to the fighting.

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Give a sketch of the imaginary action, and state your dispositions for the night.

Criticise your action, and state how you would have modified it had you at first possessed fuller instructions regarding the enemy.

PART II

General Idea

Notwithstanding disastrous result of advanced guard action, Red commander decides to close up during the night, and defend the passages of the Yare, and even advance beyond it if circumstances permit.

Special Idea

Seven miles south of Thorpe are the following troops that have marched 13 miles. It is still raining. The mornings are misty in the valley of the Yare.

3 Squadrons cavalry.
5 Field batteries.
1 Battalion of 2nd brigade.
3rd Brigade (4 battalions).
Divisional ammunition column.
Supply column.
1 Field hospital.

It is 10 P.M. Issue orders to carry out the General Idea. Also issue the subsidiary brigade and regimental orders.

N.B.—The 1st brigade is at Thorpe. Three battalions of 2nd brigade are on outpost duty.

SOLUTION No. IV

This Scheme (No. IV.) is not a promotion examination paper, but was drawn up by the Director of Military Education in India, with a view to giving officers practice in writing orders. No disposition of troops on the map is required, and therefore the map of the River Yare country, or Map No. II.*a, is all that is necessary for reference.*

It will be noticed that a sketch of an imaginary action, which ultimately results in defeat, has to be given, and I have therefore knowingly made mistakes in my conduct of the fight which have largely contributed to my defeat.

In one very excellent solution to this scheme which I have seen

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the writer intentionally sent only one messenger to carry an important order to the force detached on the flank, and also omitted to ask for a receipt. The messenger met with an accident, and the order was not only not received, but its non-receipt was unknown to the officer who issued the order. These mistakes were also purposely made, and were based on the incident of the single officer sent by Soult with a message to Vandamne in the Waterloo campaign, when no receipt had been asked for, and the messenger met with an accident. I have touched on this incident in my solution to No. I. Scheme.

I presume that I, as commander of the A.G., am riding at the head of the vanguard support. I issue verbal orders to the main guard (probably at least 1 mile in rear) to close up on the vanguard infantry, which will march to Hall's Farm. The 3 battalions, the battery, and the field company R.E. will form up south of Long Hill crest in rendezvous formation, covered by the cavalry and mounted infantry on their front and flanks, and I personally reconnoitre the position. It is two miles from Thorpe to Hall's Farm, and taking into consideration the distance of the main guard from me and the length of the column, it will probably be one and a half hours before I have concluded my reconnaissance and have the whole force concentrated ready for action.

The battery commander accompanies me on my reconnaissance, which I make from Long Hill.

Orders No. 3 by Brig.-General A.B., Commanding A.G., Red Force :—

LONG HILL,
18th July 1897, 6 P.M.

I. Information has been received from the cavalry that STOKE and RONDAL are occupied by the enemy, and that his cavalry vedettes, who were on LONG HILL and South of it, have fallen back, presumably on those villages.

It is believed that the villages are held only by cavalry and mounted infantry.

II. The G.O.C. has determined to seize the passages of the river YARE at STOKE and RONDAL before the enemy's advanced guard arrives.

III. The cavalry and mounted infantry are placed under the orders of Major B., 1st Hussars; he will himself proceed with the greater portion of his force across the river YARE at MICK's

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FARM FORD and cover the right flank of No. 1 battalion, which is detailed to make a flanking movement on RONDAL from the FORGE BRIDGE.

Major B. will also despatch some cavalry and mounted infantry to cross MILL BROOK at the Ford South of BULL INN, and threaten the enemy's right flank and rear from the neighbourhood of STOKE HILL and NEW BRIDGE.

IV. The O.C. R.A. will bring his battery up ready for action against RONDAL from a suitable position to be selected by him on LONG HILL SPUR (East of the HALL'S FARM), RONDAL road.

As, however, it is intended to seize RONDAL village by a *coup de main* before the infantry of the enemy's advanced guard can arrive, and as the noise of artillery fire would probably cause him to hasten his advance, the battery will not open fire except on the orders of the G.O.C.

V. The O.C. No. 1 battalion will at once proceed to the Forge Bridge, cross the bridge, and deploy for attack against the S.E. of RONDAL.

The O.C. No. 2 battalion will support the attack of No. 1 battalion by advancing on RONDAL from the South with a half-battalion from the KENNELS and a half-battalion from the FIRS. He is not to attempt to rush RONDAL BRIDGE until the enemy is seen to be evacuating RONDAL under the flank attack of No. 1 battalion.

The O.C. No. 3 battalion will himself, with a half-battalion of his regiment, make a feint attack on STOKE village from the direction of DICK'S FARM.

This attack will be merely a feint, because Stoke village can receive no reciprocal fire defence from Rondal, and its defenders must necessarily retire when Rondal village is taken, and will probably do so when they find themselves threatened in flank and rear by the cavalry and mounted infantry from Stoke Hill.

The remaining half-battalion, No. 3 battalion, will remain South of LONG HILL SPUR as a general reserve under the G.O.C.

VI. The field company R.E. and brigade ammunition reserve and bearer company will remain at HALL'S FARM, and second line transport, &c., at DOD'S FARM. Half a company No. 3 battalion will be detailed as escort to the latter.

VII. The O.C. Supplies will make arrangements to issue rations for to-morrow at the close of the action.

VIII. As far as time and circumstances permit, opportunity

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should be taken to let the troops eat their evening meal whilst No. 1 battalion is proceeding to the flank attack on Rondal.

Presumably No. 1 battalion was on vanguard, and the men had their evening meal whilst awaiting the arrival of the remaining troops.

IX. The G.O.C. will remain during the action near the HALL'S FARM, RONDAL road, with the battery.

By Order,
(Signed) C. D., *Major*,
Brigade Major,
Advanced Guard, Red Force.

SKETCH AND COMMENTS ON THE IMAGINARY ACTION

As G.O.C. I think I was right in personally reconnoitring Stoke and Rondal under the screen of the cavalry and mounted infantry.

Long Hill, too, seems a good position for the G.O.C.

As it turns out, the cavalry officers' patrol has only partially reconnoitred the country about Cromer, for a force of the enemy's infantry, some 200 strong, are in Box Wood, and infantry are in both Rondal and Stoke, and not merely mounted troops as was supposed. Moreover, I have relied too much on the reports as to Blue commander's incapacity.

The attack takes place as I ordered, but the cavalry and mounted infantry under Major B. are fired at from Box Wood and the School. No. 1 battalion has to detach 4 companies to contain this unexpected attack; whilst the other half battalion presses on against Rondal. I order my battery to open fire on Rondal, but two hostile batteries suddenly come into action from near the Stag and silence my battery. A heavy infantry fire is opened from Rondal and Stoke; and Rondal is only seized with very heavy loss, and at about 7 P.M.

I made a great mistake in not ordering the field company R.E. to support the attack on Rondal, and the brigade ammunition reserve was too far to the rear, for the defenders in Rondal, *i.e.* part of Nos. 1 and 2 battalions, began to run short of ammunition, as happened to the defenders of "La Haye Sainte" at Waterloo, and they have not enough tools to prepare Rondal for defence against counter-attack. An exactly similar instance as regards tools happened to the French at Colombey Nouilly, and I should have taken warning by the mistakes made by the French at the last mentioned place and by the incident at Waterloo.

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At about 7.45 P.M. the enemy make a strong counter-attack, well prepared with artillery fire; and a large force of infantry works down the valley from Reid's Farm. Nos. 1 and 2 battalions have to retire in great disorder. I cover their retreat with the half-battalion of No. 3 in reserve.

The danger of making an attack on a village held by infantry, when the attack has not been previously prepared by artillery fire, was exemplified by the attack of the German Guards at St. Privat, and it would have been far wiser for me to have thoroughly reconnoitred round the Northern flanks of Stoke and Rondal whilst awaiting the arrival of the A.G. main guard. No impression was made on the defenders of Stoke, even when Rondal fell, as they knew they had infantry reserves close at hand. If, however, I had only committed myself to artillery fire to start with, and properly prepared the infantry assault, I should either have drawn the fire of the other batteries, or probably caused the enemy to evacuate Rondal, without any loss to my infantry. To rely merely on the information of one cavalry patrol, and not supplement it by further cavalry reconnaissance, was obviously rash; the country north of the river Yare is wooded and enclosed and obviously required very careful reconnoitring; and for this rashness and other mistakes I paid the penalty.

PART II

Orders No. 3, by Lieut.-General C., Commanding Red Force:—

7 miles South of THORPE,
18*th July* 1895, 10 P.M.

I. The advance guard has been checked at the river Yare.

(*Brigade commanders must be confidentially informed of the true state of affairs.*)

II. The G.O.C. Red force has determined to make a night march to-night, seize the passages of the YARE at daybreak, and continue the advance on FRIMLEY.

III. The outposts of the 2nd brigade extend from MICK'S FARM on the East to the MOUNT on the West, and the following crossings, fords, and buildings, &c., are strongly held: MICK'S FARM, the FORGE BRIDGE and FORGE, THE KENNELS and surrounding woods, THE FIRS, DICK'S FARM, and the LODGE North of the MOUNT, but the enemy are holding all other bridges and crossings, including RONDAL and STOKE.

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IV. The whole of the remainder of Red force will make a night march and advance to the support of the advanced guard.

V. The 3rd brigade and No. 1 battalion, 2nd brigade, under the orders of the O.C. 3rd brigade, will march from its bivouac to THORPE at 11.55 P.M., and should arrive at THORPE, 7 miles distant, at 3 A.M., and thence march, *viâ* BELL'S FORD and PAT MILL, and take up a rendezvous position between HALL'S FARM and TOR WOOD. It will halt for 10 minutes 200 yards South of THORPE.

VI. At 3 A.M. the 1st brigade at THORPE will march, *viâ* the LUNEBURG ROAD, cross the river at MICK'S FARM FORD and the FORGE BRIDGE; seize CROMER; place it in a state of defence, and take up a line of defence, facing West and to the North and South of CROMER, along the road, to assist in covering the advance of the 2nd and 3rd brigades at daybreak.

VII. Each brigade commander will take the usual night march precautions, and the 3rd brigade commander will detail 2 companies as a baggage guard.

VIII. The following will be the order of march of the divisional troops, who will move off in succession after the 3rd brigade, starting at 12.20 A.M., or when the 3rd brigade is clear:—

3 Squadrons cavalry,
5 Field batteries,
Field hospital,
Divisional ammunition column and baggage,
2 Companies 3rd brigade.

The cavalry and R.A. will take up a rendezvous position behind the 3rd brigade; the field hospital will halt at PAT MILL; the divisional ammunition column and Army Service Corps company will remain at THORPE with the two companies rear guard as escort.

IX. All the troops should have hot coffee and biscuits before starting.

X. The G.O.C. on the *march* will be at the head of the 3rd brigade; and on *arrival*, at HALL'S FARM, or on the crest of the plateau due North of it. Headquarters: HALL'S FARM.

By Order,
(Signed) X. Y., *A.A.G.*,
Red Force.

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3rd Brigade.
Order No. 4.

Advanced Guard—
O.C. Lt.-Colonel D.
½ No. 1 Battalion.

Main Body in order of march.
½ No. 1 Battalion.
No. 2 Battalion.
No. 3 Battalion.
No. 4 Battalion.
Brigade ammunition reserve.
Bearer company.
Field hospital.
6 Co.'s, No. 1 Battalion of 2nd brigade.

Rear Guard.
2 Co.'s, No. 1 Battalion of 2nd brigade.

7 miles South of THORPE,
18th July 1895, 10.30 P.M.

I. With reference to Divisional Orders No. 3 of this evening, dated 10 P.M. (*I presume the Divisional Orders have been written with a field trypograph or other reproducing machine, so that each unit has a copy*), the brigade will march at 11.55 P.M. Starting point, cross-roads at RED LION INN.

II. The advance guard will move off at a distance of 200 yards ahead of the main body. Major F. and Lieutenant G., who have previously reconnoitred the road, will guide the column, and will report themselves to Lieutenant-Colonel D.

III. The column will keep well closed up. The distance is 7 miles; pace about 2½ miles an hour, including a halt every hour, the duration of which must depend on whether an even pace is maintained.

IV. The O.C. Rear Guard will report himself to the A.A.G. for orders.

V. O.C. units will arrange to give their men hot coffee and biscuits before starting.

VI. All baggage will march with the divisional baggage and halt at THORPE.

VII. The G.O.C. will march at the head of the main body.

By Order,
(Signed) A. B.,
Brigade Major,
3rd Brigade.

Dictated to Adjutants and representatives of units.

No. 4. Battalion Order by Lieut.-Colonel F., Commanding No. 2 Battalion, 3rd Brigade:—

7 miles South of THORPE,
18th July 1895, 10.45 P.M.

I. With reference to Brigade Orders of 10.30 P.M., this date, the battalion will parade at 11.45 P.M. with greatcoats on and filled water bottles.

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II. Officers commanding companies, assisted by the Qr.-Mr., will at once arrange for the supply of 1 pint hot coffee and 4 biscuits per man. (*This is from the next day's ration.*)

III. The baggage, under the Qr.-Mr., will join the brigade baggage.

IV. O.C. companies will very carefully explain the orders regarding night marches, especially about smoking and talking. The strictest silence must be observed on the march; the men to keep closed up and all words of command will be given by officers only.

V. A halt will be made every hour; and only in cases of urgent necessity will a man be permitted to leave the ranks at any other time.

VI. The O.C. will march at the head of the battalion.

By Order,
(Signed) F., *Captain and Adjutant,*
No. 2 Battalion.

I have assumed that the divisional troops, as it is a night march, must be kept well in rear and covered by infantry.

The field hospital goes to Pat Mill, as water is conveniently near (always a desideratum for a field hospital site); and the divisional ammunition column will be sufficiently near at Thorpe for the battery wagons to go back and re-fill.

A village like Thorpe will probably have supplies, and the supply column could fill up there.

No. 2 brigade, which fought the action, will continue on outposts. No. 3 brigade passes through them to the frontal attack in conjunction with the flank attack from Cromer.

Cromer seems strategically the best flank to attack from, because presumably the enemy's line of communication lies through Cromer; and they are, consequently, threatened more by an attack on this flank than on the New Bridge flank, which would also entail a long detour across the enemy's front.

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SCHEME WITH SOLUTION No. V., MAP No. V

SPARE MAP FOR THIS SCHEME IS MAP No. I.*a*

TACTICS

[Three and a half hours allowed—300 marks.]

N.B.—When a candidate considers that, in order to answer a question, he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

GENERAL IDEA

A force is retreating from Brighton to London by the road leading due north through Brockham. It is also making a flank march with reference to an enemy, who is in the direction of Reading, and who may be assumed to be within striking distance.

6 Guns Royal Horse Artillery.
4 Squadrons cavalry.
250 Mounted infantry.
2 Battalions infantry.
Bearer company.

1. You are detached with a force as per margin, to guard the exposed flank during this march. You start from about Tile House.

(*a*) Write out general instructions for the march of your party, indicating clearly dispositions, routes to be followed, and probable action of each arm if attacked *en route*. Brief explanations and reasons must be given for the course adopted.

(*b*) Assume that you are sharply attacked, from the direction of Reading, about one hour after your infantry have left Tile House, by a force apparently consisting of 2 regiments cavalry, 4 batteries, and 500 infantry, probably mounted infantry. Sketch on the map your probable disposition at this juncture, assuming that your cavalry have been driven in; and discuss your position and action, *remembering the special duty on which you are engaged*. The river may be assumed impassable, except by the bridges.

(*c*) Assuming that the attacking force—see *ante* (*b*)—has been pushed ahead with the special object of retarding, and bringing to bay, the retreating force (see General Idea); under these condi-

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tions discuss its probable action, and say if you think the ground favourable for its purpose, and suitable to its composition, or not, giving reasons.

2. The rear guard of the force mentioned in the General Idea is overtaken by the enemy, and stands to fight on the position *facing South*, of which Brockham House is roughly the centre. Strength of rear guard: 2 regiments cavalry, 2 batteries Royal Horse Artillery, 3 battalions infantry, and 1 company of engineers.

Criticise fully the position held, assuming that the bridges at Brockham, Box Hill Farm, and Burford have not been destroyed, and state particularly the weak points in it, and the dispositions you would make to secure them.

3. Both the attacks referred to in Questions 1 and 2 are beaten off. The retiring force then halts, and posts outposts *for the night*, *facing West* and *South*, guarding the line of the river Mole.

Estimate the force required for *the Southern section* of the outpost line, Burford Bridge to Brockham. Place the outposts on the map, and explain the dispositions made. The right flank may be assumed to be in touch with the section to the north of it; the left flank at Brockham is unprotected.

4. At daylight there are no signs of the enemy in front of the outpost line. A reconnaissance is at once ordered to be pushed, *viâ* Brockham and Dorking, to Westcott. You are detailed for this duty, with 50 cavalry and 50 mounted infantry. Detail your dispositions and movements, and submit one or two imaginary reports sent back by you. Assume that your right flanking patrols are fired at from Denbie's Hall.

5. One of your scouts (see preceding question) reports to you that he has seen a body of the enemy marching northwards on the road across Rammer Common. He watched them passing a tree. The infantry, in fours, were 5 minutes passing; the cavalry, in sections, 5 minutes; the artillery, in column of route, 3 minutes. What is your estimate of the force seen?

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SOLUTION No. V

QUESTION I.(*a*)

Flank Guard Orders No. 2, by Col. A. B.

Independent cavalry.
O.C. Colonel C. D.
1st Hussars (less 2 troops).
250 Mounted infantry.

Advanced Guard.
1 Troop cavalry (less 1 section).
1 Co. No. 1 Battalion.

Main Guard in order of march.
1 Section cavalry.
7 Cos. No. 1 Battalion.
Battery.
Bearer company.
7 Cos. No. 2 Battalion.

Rear Guard.
1 Troop cavalry.
1 Co. No. 2 Battalion.

TILE HOUSE,
1st June 1897, 9 P.M.

I. The enemy is known to be in the direction of READING, and within striking distance.

II. The main body, RED force, moves from BROCKHAM on LONDON at 6 A.M. to-morrow, and Colonel A. B. has received orders to protect its exposed flank during the march.

III. Lieutenant-Colonel C. D. will move out his force at 5.30 A.M. on to the high ground West of the river MOLE, and will form a screen, facing West, but gradually moving North, parallel to, and in touch with, the infantry of the flank guard. He will select suitable bodies of mounted infantry to cover his retreat and guard the crossings over the MOLE, and will utilise the remainder as he deems best, but as the enemy is reported very strong in cavalry and horse artillery, he should run no risk of being cut off from the MOLE BRIDGES.

IV. The advanced guard, keeping in touch with the left flank of the advanced guard main body, will move off to be clear of BOX HILL FARM BRIDGE at 6 A.M., and march thence in a direct line on GIBBON'S GROVE.

V. The main guard will follow the advanced guard at 6 A.M., starting-point, cross roads at TILE HOUSE.

VI. The rear guard will follow about half a mile in rear of the column, keeping in touch with the flank of the rear guard of the main body.

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VII. If the flank guard is attacked during the march, the commanders of *its* advanced and rear guards will, if they are in the vicinity of a bridge over the MOLE, assist in covering the retreat of the cavalry and mounted infantry, and prevent the enemy from effecting a crossing.

As long as the enemy is kept on the West of the MOLE RIVER, the march of the main body cannot be seriously interfered with.

VIII. Troops will carry one day's cooked rations, and hot coffee and biscuits should be provided before starting.

IX. The G.O.C. will march at the head of No. 1 Battalion.

By Order,

(Signed) E. F., *Captain*,
Brigade Major,
Flank Guard, Red Force.

Dictated to representatives of each corps.

Reasons and Considerations

I send the cavalry West of the river Mole, because the ground is well suited for their movement, and they should be able to give me early information of the approach of an enemy. I make the cavalry commander responsible for protecting his line of retreat across the river, and put the mounted infantry under his orders, because a force of mounted infantry, left behind to protect a bridge, can easily, when other bridges farther on have been secured, trot on and rejoin the force. If infantry detachments were detailed for this purpose great delay would ensue.

The horse artillery battery is not sent with the cavalry, because the cavalry will be split up in reconnoitring formation, and because there are such excellent artillery positions East of the river, whence an effective fire can be brought on to the river crossings and approaches. I expect, moreover, that the enemy will have a preponderance in artillery.

For the same reason I march all the infantry East of the river. If I took them West of the river, and my cavalry were driven back by a superior force of cavalry and artillery, the hostile artillery, in such open country as it is, could come into action against my infantry at ranges at which the latter could not reply, and if forced to retreat across the river, my infantry would be greatly

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exposed while crossing, and while ascending the steep slopes East of it.

I detach a very small advanced and rear guard, so as to keep in touch with those of the main body, and as they are so small I do not detail a commander. The senior officer would command as a matter of course. If my left flank is attacked, and the advanced and rear guards happen to be near a bridge at the time, they have orders to assist in its defence, but I do not wish them to go much out of their way for this purpose, more particularly if such action involved a retrograde movement, which would delay the march.

As I am marching with the main body flank guard myself, and once I have gained the high ground East of the river, shall have a bird's-eye view of the whole country, I issue no orders as to the action of the infantry and artillery composing it; they will act according to circumstances, verbal orders being issued on the spot. The horse artillery battery, owing to its great mobility, should be able to move rapidly and take up a position to cover whichever crossing seems most threatened.

No mention is made of the 2nd line transport, supply column, &c., in orders; I have sent it previously to join that of the main body, so as to march quite unencumbered, and for the same reason the troops carry one day's cooked rations.

It would be of great advantage if before the march of the flank guard takes place, the commander of the forces could confer with his cavalry commander, and the commanders of the advanced and rear guards, as to the action to be taken under various likely contingencies.

It is most undesirable to fetter their action, but at the same time it would doubtless be of advantage to know how the cavalry commander proposed detailing his mounted infantry, for instance, for the defence of the bridges, so that the commanders of detachments on the East of the river could judge to some extent whether their assistance, in case of attack, was necessary or whether the force attacking could easily be withheld by the detachment at the bridge.

Question I.(*b*)

From Tile House to Juniper Hall is $2\frac{3}{4}$ miles by the route taken, so that the head of No. 1 battalion might have reasonably reached the latter place in about one hour from starting. The disposition of my troops is shown on the map.

No. 1 battalion is defending Pray Bridge; No. 2 battalion is

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defending Burford Bridge; the battery is placed so as to bring a fire to bear on the approaches to these bridges. The mounted infantry, which were at Burford Bridge, have moved on to Mickleham Park, and are defending the two bridges at the Priory, and 200 mounted infantry, with the cavalry, who have been driven back towards the river from about Conicut Wood, are checking the enemy's advance from about Beech Copse. The advanced guard infantry have taken up a position in the folds of the ground to assist in the defence of the Priory bridges, the troop with it being in touch with the main body advanced guard; and the rear guard, also in touch with the main body rear guard, has taken up position to guard Box Hill Farm Bridge. I should at once acquaint the main body commander with what is happening, and concentrate all my efforts on preventing the enemy from effecting a crossing. It should be quite impossible for him, with the force at his disposal, to force either Pray or Burford Bridges; if he moves Northwards I shall at once continue my march, but if he moves Southwards, and attacks the Box Hill Farm and Brockham Bridges, I should await instructions from the main body commander before continuing the march.

QUESTION I.(*c*)

I should say that the probable action of this force would be to drive in across the river all the cavalry opposed to it, and, if possible, bring the enemy's march to a standstill, make a demonstrative attack on one or more of the bridges, and give time for the infantry and more artillery to arrive. Without a large force of infantry it does not appear feasible to force a passage which is being held from the Eastern side. As soon as the infantry and more artillery have arrived, the two regiments of cavalry, the four batteries, and the 500 infantry (mounted infantry) might perhaps with advantage move rapidly Northwards, seize some undefended, or weakly defended crossing, and aid the main attack by a demonstration on the enemy's flank, carefully guarding its own line of retreat across the river. For such action the ground West of the river seems highly favourable, provided the infantry is mounted infantry, and the force consequently very mobile, but the ground is very unfavourable to such a force on the Eastern bank, as it commands the whole country, and reduces the offensive action of such a force to a minimum, in regard, that is, to seizing a crossing. Till a crossing has been seized, any serious offensive action against troops on the Eastern side of the river seems impossible, even with the large force of artillery.

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Question II

It is not easy to criticise this position without definitely knowing whether, when the rear guard stood to fight on the Brockham House position, the flank guard also remained in position guarding the Burford and Pray Bridges, and also those at the Priory. I think, however, that as in Question III. it is stated that the retiring force halts and places outposts, facing West and South, guarding the line of the river Mole, that I may safely assume that the march of the main body from Brockham on London has not been carried out farther than about Headley Heath, and if this is so, when the rear guard stands to fight, the flank guard will also be available for guarding the Burford Bridge and those North of it.

The rear guard then will only be concerned with the Brockham and Box Hill Farm Bridges, and its right flank is secure; and I will proceed to criticise the Brockham House position on the above assumption.

(*a*) The locality chosen fulfils the strategical object.

(*b*) The extent of the position, which is rather more than $1\frac{1}{2}$ miles in length, is not much too extended for 3 battalions on a rear guard, under modern conditions, with all 3 in firing line, as they cover a front of about 800 yards per battalion, or $1\frac{1}{2}$ miles in all.

There are, moreover, only two points of crossing, viz., Box Hill Farm and Brockham Bridges, and improvising other means of passage on the enemy's part will take time.

(*c*) There is a good field of artillery fire to the front and right flank; the extent of the map gives no information as to the left flank. To keep Box Hill Farm Bridge under very close rifle fire, the infantry will have to be pushed some way down from the crest, and will consequently be exposed; and for the protection by infantry fire of Brockham Bridge the infantry will have to be absolutely in the valley. On the other hand, Box Hill Farm Bridge is within 1100 yards of the crest of the hill, at which distance infantry fire should be effective; and as the other bridge can be kept under effective artillery fire, it would probably be better to keep all the infantry behind the crest of the hill.

(*d*) The right flank is very strong, both on account of the commanding nature of the ground and the obstacle offered by the river, and also because of the protection afforded by the troops of the flank guard.

As stated in (*b*), the map is not extensive enough to enable one to judge the strength of the left flank.

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(*e*) If the infantry are pushed down the hill, there will be very little cover for their supports and reserves, and if the latter are kept behind the crest, they would be much exposed in moving forward to reinforce. On the other hand, if the firing line occupies the crest, the banks and ditches along the road in rear will give excellent cover to supports and reserves.

(*f*) There is an excellent artillery position about the Labourer's Cottage within effective range of Brockham Bridge, and enfilading the road leading to Box Hill Farm Bridge.

(*g*) There is ample depth, with good lateral communications, behind the crest of the position.

(*h*) As the country is quite open, there are ample means of retreat from the position, and covered from view by the Brockham House crest.

(*i*) There are no good positions for the enemy's artillery, they are all low and commanded, except that at Denbie's Hall, which is 3 miles from Brockham House and a little below it.

(*j*) A good second position, if the rear guard is forced to retreat, exists on the Southern edges of Clerkley and Nore Hill Wood.

(*k*) Brockham Village being on the enemy's bank is a great disadvantage, as it will form a point of *appui* for capturing the bridge, and the re-entering bend of the river with the wood West of Box Hill Farm flanked by two artillery positions is an advantage to the enemy if he wishes to improvise means of crossing.

(*l*) As there are several houses on or near the crest, there is presumably sufficient water for a small force.

Question III

The total force available for finding the outposts in the Southern section is presumably the rear guard, the strength of which is mentioned in Question II., and I think of this force 1½ battalions and 1 troop cavalry will be sufficient. It must be remembered that the rear guard is to protect the whole force, which has apparently ceased its retirement, and that three battalions of infantry are available.

I do not propose to use cavalry standing patrols in this case, because, although the enemy's attacks have been beaten off, I imagine he is in strength in the neighbourhood of Dorking, and my cavalry standing patrols would consequently be liable to encounter infantry patrols at night, and I therefore content myself with guarding the bridges in strength, patrolling between the

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piquets north of the river, and pushing infantry patrols out over the river to a short distance.

The dispositions and strength of the outposts are shown on the map in black.

No. 1 piquet is a whole company supported by another whole company, and with a company in reserve close up, because Burford Bridge is an important post.

No. 2 piquet is only a half-company with a half-company as support, because it is not posted at a bridge, but only where a tributary joins the main stream.

It seems important, however, to watch this point; because the tributary stream offers facilities for preparing bridging material, and as there is a mill on this tributary, there may be a boat on the enemy's side. The section from Burford Bridge, inclusive, to Box Hill Farm Bridge, not inclusive, is allotted to the half-battalion, and the remainder of the section to the battalion.

The detached post formed from No. 3 piquet is placed where it is, to lessen the distance to be patrolled between piquets.

Brockham Bridge seems by far the most important post, as the village, being on the enemy's bank, offers him a convenient point of *appui*. I have therefore placed two companies on piquet there.

The piquets are placed *in* Brockham, all the entrances to the village are strongly barricaded, the supports are up close behind, and a reserve is within a few hundred yards of the supports.

I presume Brockham is the left flank of all the outposts, but it seems perhaps advisable to have a small piquet watching the river East of Brockham to render the left flank still more secure.

Question IV

Before starting, I send an officer with a telescope on to the high ground near Brockham House to endeavour to see if there are any signs of an enemy in and about Dorking. He reports that all seems clear.

I have had both detachments inspected before starting. I explain to the officers and N.C.O.'s what is required, set my watch with the Brigade Major's, see that I have my map, pencils, compass, &c., and finally start *viâ* Brockham. I use the cavalry for the reconnaissance work, divided into three advanced patrols; those on the right and left being a section each strong, the central patrol two sections, or roughly 32 men in all. With the

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remaining cavalry and with the mounted infantry I follow in support, dropping half a section of cavalry about half a mile in rear.

The right advanced patrol has orders to cross the Dorking Brook at Pixholme Mill, and gain the high ground North of Dorking, the left patrol to work round on to the ground South of Dorking, and the centre advanced patrol to move cautiously forward on to the crest East of Dorking.

These precautions seem necessary, because Dorking, being a large place, might easily be held in force, although no signs of an enemy were seen from Brockham House.

The flank patrols signal to the centre advanced patrol that all appears clear, on which the centre patrol rides into Dorking and watches the approaches on the far side. The flank patrols remain out in observation.

The support halts on the near side of Dorking at the Eastern entrance, and I send for and interview the Mayor and one or more intelligent townspeople. As the country is friendly to Red force, the information given by the inhabitants, especially if questioned separately, may be relied on.

A retired officer informs me that Dorking was evacuated at about midnight; and that the last body of hostile troops, viz. a battery, a regiment cavalry, and a battalion infantry, left about 3 A.M. These numbers were given by one of the inhabitants who was a retired officer.

I then signal back the following message to Brockham House:—

Date, 2-6-96.

"*No.* 1.
"*From* Capt. A. B.,
" 1*st Hussars*.
"*Place*, DORKING.
"*Despatch*, 6 A.M.

To Brig.-Major,
Rear Guard,
Place, BROCKHAM HOUSE.

"Mayor and two other reliable inhabitants report enemy evacuated DORKING 2 A.M. this morning, moving North-East. Rear guard left at 3 A.M. Am moving on WESTCOTT and thence North.

"A. B., *Captain*,
" 1*st Hussars*."

A duplicate of this message is also sent on by mounted orderly.

I then move on Westcott. My right flank patrol advancing towards Denbie's Hall.

Westcott is quite clear of the enemy, nor has it been visited

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by them; but I hear shots from the direction of my right patrol, and they signal to me that an enemy is in sight.

I therefore push Northwards, my left flank patrol keeping out of rifle range from Denbie's Hall, and as they advance I see a few hostile cavalry leaving Denbie's Hall, moving North-East, and they have evidently retired under the turning movement executed by my left flank patrol.

I should now follow up and try to get into touch with the enemy's rear guard and ascertain his strength.

Question V

200 infantry in fours pass a given point in a minute.

Therefore 200 × 5 =	1000
Deduct 20 per cent. for transport, &c.	200
	800

or about 1 battalion.

About 5 guns or wagons pass a given point in a minute.

Therefore 5 × 3 = 15 guns or wagons;

that is, 6 guns *and* 9 wagons, or 1 battery.

This calculation may be done as follows, if preferred:—

If infantry with guns behind them are marching at the rate of $3\frac{1}{3}$ *miles an hour, or* 100 *yards a minute, in* 3 *minutes the artillery will have traversed* 100 × 3 = 300 *yards, which is the length of a field battery on the march.*

100 cavalry in sections behind infantry pass a given point in a minute.

Therefore 100 × 5 = 500, or 1 regiment, *i.e.* 400 men with its transport (first line).

As the force is such a small one, I am making no allowance for straggling.

It will be noticed that Schemes No. VI. and VII., which follow, are on different lines to those which precede them; more particularly in regard to the fact that instead of, as in the former schemes, a candidate being asked to merely write his orders, giving his reasons, in these schemes an *appreciation* of the situation; then a *plan;* and, finally, the *orders* are asked for. This style of question is more likely to be followed in future than has hitherto been the case; and readers are particularly enjoined not to confuse an "appreciation of the situation" with a "criticism on the position held by an enemy or by oneself." The two things

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are entirely different. A *criticism of the position* held means a discussion as to whether the position taken up by oneself or by the enemy, as the case may be, is easy to attack or defend; whether its flanks are strong, whether it has good artillery positions, &c. &c. An *appreciation of the situation*, on the other hand, means a general summing up of the whole situation, not only from one's own point of view, but also from the enemy's. The following is a definition of it given by an examiner in tactics:—

"An appreciation of a situation, as I understand it, is the estimate of the task before an officer who may be placed in command of a body of troops in the field. When asked to furnish an 'appreciation' it is for him to clearly estimate from any data that may be available, *i.e.* from the reports of movements and operations that may have already taken place, from the orders he receives, every word of which he should carefully weigh, from careful study of the map; the probable movements of the enemy, their object, the nature of the country over which they operate, time and distance considerations, the obstacles to movement, the possible flank and the tactical movements which may have to be guarded against, and finally the conditions which may affect his own movements, and the best means in his power to carry out the spirit of his instructions."

SCHEME (WITH SOLUTION) No. VI., MAP No. VI

Spare Map No. VI.*a*

TACTICS

[3½ hours allowed—300 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

The *whole* paper should be attentively considered before any single question is attempted.

Note.—*Officers are reminded that*, for examination purposes, *it is necessary to state fully the* considerations *and* reasons *which influence them in deciding on particular dispositions, particular orders, or particular action.*

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General Idea

You command the advanced guard of a Blue force moving from Southsea towards London, *viâ* Trucksford, Elstead, &c. On the night of the 29th July you are halted about 5 miles south of Hown. Your force consists of 2 squadrons cavalry, 1 battery horse artillery, 3 battalions infantry, 2 companies mounted infantry (200 men), 1 bearer company, 1 supply column, and your orders are to march at 4 A.M. to secure the two bridges across the Dene at Elstead, and the two fords nearest to that place (one below it, the other at Crooksbury).

The enemy is reported to be advancing, strength unknown. At 6 P.M., on the 29th, his cavalry patrols were reported to be 10 miles north of Crooksbury on the Guildford Road.

Write:—

1. An appreciation of the situation. (50 marks.)
2. Your plan. (35 marks.)
3. Your orders. (45 marks.)
4. Show the disposition of your advanced guard on the map at the moment when the infantry main body is clear of Hown. (30 marks.)
5. In marching on the NW. frontier of India, on a hill road having heights on either side, what steps would you take to ensure the safe passage of your main body? Illustrate your answer with a rough sketch. (50 marks.)
6. Discuss and criticise the tactics adopted by the Boers in the war in South Africa: and state how, in your opinion, such tactics should be met. (90 marks.)

SOLUTION No. VI

Question I

On the night of the 29th July I have halted with my force (an advanced guard) about five miles south of Hown, and I should of course have thrown out outposts, probably half a battalion and some cavalry standing patrols, to ensure the safety of my force at night. My orders are to march at 4 A.M. the next morning in order to secure the two bridges across the Dene at Elstead and the two fords, one below that place, the other at Crooksbury. The distance to Crooksbury from my halting-place is as near as can be eight miles; and at 6 P.M. on the evening of the 29th July the hostile cavalry patrols had reached a line ten miles north of Crooksbury.

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Assuming that the enemy has also recognised the importance of seizing these crossings, and also starts at daybreak, which, in England, at the end of July, would be about 4 A.M., he has two miles farther to go than I have.

As I command the advanced guard of a force moving on London *viâ* Elstead, it is clearly highly desirable that not only should I secure the crossings over the river Dene at and near Elstead, but that I should hold a position, if possible, on the far side of the river, so as to keep the enemy's artillery at a distance and secure for my main body the power of debouching, or crossing the river, unmolested.

A position in some ways admirably suited for this purpose exists on the plateau, surrounded by the 400 contour, about one mile north of Crooksbury, and about nine miles from my evening's bivouac or halting place, and therefore exactly equidistant between the two forces, since the enemy's cavalry were ten miles from Crooksbury.

This ground is of great importance to both sides therefore, and the scheme to some extent constitutes itself into a race to reach this plateau. To seize and hold Crooksbury and Elstead is, of course, of great advantage, but it will be of still greater advantage to me if I can seize and hold the plateau north of Crooksbury, and thus keep the enemy out of sight of the river Dene crossings.

There is no cover apparently on the crest of this plateau, and though my infantry, when they arrive there, might entrench themselves, this will not be possible for my cavalry and mounted infantry, who will be the first of my troops to arrive there, unless indeed they find themselves forestalled.

To reach this plateau before the enemy a start at 4 A.M. precisely, combined with the greatest expedition, are absolutely essential, and this can only be obtained by pushing forward my cavalry, mounted infantry and horse artillery at the utmost speed, combined with due precaution, and following them up as expeditiously as possible with the slower moving infantry. One of three things seems likely to happen. The first is, and this is the one I shall endeavour to bring about, that my cavalry and mounted infantry, backed up by the horse artillery from a position south of the river, reach this plateau first, and are able to hold on to it till my infantry arrive, in which case my main body will probably be able to cross the river unmolested. The second contingency is that my cavalry and mounted infantry only just reach Crooksbury and Elstead first, but find

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the enemy's cavalry and mounted infantry holding the plateau north of the river. In this case the O.C. my cavalry and mounted infantry, if the enemy were in greatly inferior numbers, might possibly be able to manœuvre them out of their position by turning their right flank, *viâ* Tilford and Sheephatch, but he is more likely to have to await the arrival of the infantry proper. The third contingency is that the enemy's cavalry and mounted infantry reach Crooksbury and Elstead before my mounted troops. In this case, even with the aid of the artillery the enemy could hardly be forced to evacuate these places by a direct attack, and my mounted troops would either have to await the arrival of the infantry, or, by containing the enemy in front, try and cut off his line of retreat by a turning movement *viâ* Tilford and Sheephatch.

As, however, I am told to start at 4 A.M., the Commander of my side has probably information at his disposal, which leads him to know that if I start precisely at the time ordered, and move with the expedition he has a right to expect, that I shall secure the crossings. Were it otherwise, he would probably have ordered me to make a night march.

Question II

My plan is therefore to order the cavalry, less one troop, the whole of the mounted infantry, and the horse artillery to start at 4 A.M. precisely and move with the greatest speed compatible with safety, on Elstead and Crooksbury.

I should put the whole force under the one commander, and I should verbally suggest to him that, as the country is so open (I presume south of Hown that the country is of the same nature as north of it) he should effect the necessary reconnaissance to his front by means of well-mounted cavalry officers' patrols, who would gain their distance at a gallop, and thus enable him to follow at the utmost speed. If Elstead and Crooksbury are clear of the enemy, I should order him to leave the horse artillery battery with a suitable escort south of the river; and then backed up by the mounted infantry, who would hold points of *appui* such as Top Farm, Cap Wood, &c., reconnoitre with his cavalry towards the enemy. If forced to retire he should endeavour to assist the mounted infantry in holding on to the plateau, in which the fire of the guns would assist. As Commander of the force I think I should accompany the vanguard and not remain with the infantry. In this way I should gain earlier information.

The infantry proper would follow up with the greatest speed

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possible, and on arrival would cross the river, provided the plateau is still being held, accompanied by the battery, and take up a position for passive defence on the plateau, entrenching themselves, and thus freeing the cavalry and mounted infantry either for action on the flanks or further reconnaissance towards the enemy as occasion required. I am not in favour of allowing the battery to cross the river before the infantry arrive, for the only position they could take would be just behind the crest of the plateau, and there does not appear any suitable ground for the cavalry and mounted infantry acting dismounted to protect the flanks of the battery. It might perhaps be well, however, to leave it to the discretion of the O.C. the mounted troops.

In all other respects I should give him an entirely free hand, and I accompany the vanguard not with the object of personally conducting the various operations, but in order to gain the earliest intelligence of the enemy.

I think it would be well to leave my second line transport at Hown to come on with the main body transport; and as regards the escort, to leave in charge of them not a single company, but of the weakly or footsore men to the extent of not less than thirty men per battalion under a selected officer.

This should leave the infantry battalions with all their weakly men weeded out, and I am in hopes they will march at very nearly $3\frac{3}{4}$ miles an hour, including halts, or even faster.

Question III

Advanced Guard Orders by
M.-General A. B.

5 miles South of HOWN,
29th July 1897, 8 P.M.

I. The enemy, strength unknown, is reported to be advancing.

At 6 P.M. this evening his cavalry patrols had reached a line and halted ten miles north of CROOKSBURY on the GUILDFORD road.

Our main body, which halted five miles to the south, continues its advance on LONDON, *viâ* ELSTEAD, to-morrow.

II. The O.C. advanced guard has been ordered to march at 4 A.M. to-morrow in order to secure the two bridges across the DENE at ELSTEAD and the two fords, one below that place and the other at CROOKSBURY.

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Vanguard.

O.C., Lt.-Col. C. D.

2 Squadrons cavalry (less 1 troop).
2 Companies mounted infantry.
1 Battery horse artillery.

Main Guard in order of march.

O.C., Lt.-Col. E. F.
1 Troop cavalry.
No. 1 Battalion.
No. 2 Battalion.
No. 3 Battalion.
Bearer company.

III. The O.C. vanguard will move off at 4 A.M. precisely, with his whole force, and march at the greatest possible speed (combined with due precautions) on ELSTEAD and CROOKSBURY. If these are unoccupied he will leave the battery under suitable mounted infantry escort south of the DENE; cross the river with remainder of force, hold suitable points north of it with mounted infantry and reconnoitre with his cavalry towards LONDON.

Every endeavour should be made to forestall the enemy, not only at the crossings, but in seizing the plateau one mile north of CROOKSBURY; and if this plateau is seized, endeavour should be made to hold it, backed up by the artillery from S. of the river, until the main guard arrives.

IV. The main guard will move off at 4 A.M., at the utmost speed and without a long halt *en route*. On their arrival at ELSTEAD further orders will be given them. Starting-point, Windmill Inn.

V. The outposts will close as soon as the vanguard has passed and take their place in the column.

VI. Second line transport and the supply column will remain at this camp under escort of not less than 30 men per battalion, with an officer to be detailed by the O.C. No. III. battalion. All weakly or footsore men will be detailed for this duty.

VII. One day's cooked rations will be carried, and arrangements will be made by units for coffee and biscuits before starting.

VIII. The G.O.C. on the march will be found with the mounted infantry.

By Order,
(Signed) G. H.,
Brigade-Major.

Dictated to Adjutants and representatives of corps.

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I should send for the O.C. units and explain my plan of action. If this were done it would probably be possible to greatly curtail the orders, especially para. III. On the other hand, the advantage of clear *written* instructions is great, and reduces the possibility of misunderstandings to a minimum.

The disposition of the troops is shown on the map. It is five miles to Hown, and before my infantry are clear of it (assuming they march at about 3½ miles an hour, including one or two short halts) probably nearly 2 hours will have elapsed. Meanwhile my vanguard should have reached the plateau (if unopposed) which is north of Crooksbury, and the map shows, as far as its limits will permit, the cavalry in two portions backed up by three troops reconnoitring along the two London roads; the mounted infantry holding the southern edge of the plateau, there being apparently no points of *appui* on the crest or northern side, and the horse artillery with its escort in position south of the river. I should much prefer to have my artillery north of the river, and on the crest of the plateau, if suitable cover for mounted infantry further ahead, and on the flanks, could be found.

My infantry, preceded by a troop, which for greater safety throws out three patrols to the front, is following the vanguard, and will eventually, with the artillery, take up a position on the plateau.

Question IV

This relates to the NW. Frontier Warfare in India, and the subject is fully gone into in the appendix to Sherston's *Tactics*, viz., *North-West Frontier Warfare.* (Thacker, Spink & Co., Calcutta.)

Question V

This question has, to all intents and purposes, been answered in the body of the book, and is not, therefore, again discussed.

SCHEME (WITH SOLUTION) No. VII, MAP No. III.*a*

TACTICS

[3½ hours allowed—300 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

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The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

The *whole* paper should be attentively considered before any single question is attempted.

NOTE.—*Officers are reminded that*, for examination purposes, *it is necessary to state fully the* considerations *and* reasons *which influence them in deciding on particular dispositions, particular orders, or particular action.*

GENERAL IDEA

A strong advanced guard, marching on London from Epsom, halts on the line Claygate-Chessington and throws out outposts. You are appointed to command No. 1 Section of the outpost line extending from the Rye stream through Stoke to the Marley stream inclusive. From the Marley stream the line is carried on through Ashton by No. 2 Section, but you are responsible for the protection of your left flank.

Your troops are: 1 squadron cavalry, 2 guns, 1 battalion infantry.

An opposing force is known to be on the march from London, but the cavalry patrols have not yet come in contact.

1. Discuss the situation and explain the dispositions you propose, with their advantages and disadvantages. (50 marks.)
2. Show your dispositions clearly on the map. (30 marks.)
3. Write out instructions to be acted on in case of attack. (30 marks.)

During the night the Officer Commanding the advanced guard receives information from the Officer Commanding the main body that a force of the enemy is marching from the West in the direction of the bridges over the Mole at Esher, and that with a view to covering the flank of the main body in its advance on London, he is to detach a force of—

1 Troop of cavalry,
150 Mounted infantry,
1 Battery of artillery,
2 Battalions of infantry,

to refuse the passage of the Mole to the enemy at all hazards. Further, that a second battery from the main body, with a troop of cavalry, has been ordered to report itself at Esher to the Officer in Command of this detached force. At 10 P.M. you are

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placed in command of this force with orders to march from Claygate at daybreak.

4. Write an appreciation of the situation with special reference to your own task. (70 marks.)
5. State the dispositions you propose, and give your reasons (30 marks.)
6. Write the orders for the march of your force from Claygate. (30 marks.)
7. In a retirement before a savage enemy on the North-West Frontier of India, what are the principles and precautions to be observed? (60 marks.)

SOLUTION No. VII

Spare Map No. III.*a* of the Stoke Claygate, L.S.W. Railway Country

For this scheme no troops have been placed on the map; as the multiplication of maps adds greatly to the expense of the book, and the scheme can be well explained without a worked out map.

Question I

On the evening of the 10th May, a strong advanced guard marching on London from Epsom halts on the line Claygate-Chessington, with 1 squadron cavalry, 2 guns, and 1 battalion infantry. I am ordered to furnish the left section of the outposts.

No mention is made of the time at which the advanced guard reaches the line on which it halts, but I assume that it is during the course of the forenoon; and that *day* and not *night* outposts are required. The fact moreover that two guns are placed at my disposal further tends to show this. The enemy is known to be on the march from London, which, as far as can be seen, lies to the north-east, and as even the cavalry patrols have not yet come into contact, the chances of being attacked during the day seem small. On the other hand, if, as is possible, one is operating in a hostile country, an opposing force might possibly appear on our right or left flank, and this contingency should not be lost sight of.

My section, I am told, extends from the Rye stream to the Marley stream through Stoke, and I am responsible for the protection of the left flank.

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It is clearly therefore necessary to employ my cavalry in reconnoitring to my front and left flank; whilst with my infantry and guns I take up a line of resistance to oppose an enemy should he advance. Esher is dangerously situated on my left flank; it would form a strong point of *appui* and bridge head should an enemy advance from the west and seize the Esher bridges. I do not think my instructions, which give me a clearly defined section, admit of my posting infantry in Esher; but I might well direct my squadron commander to post all the men he can spare from reconnaissance duties to hold these two bridges against any possibility of their being seized by a *coup de main* and to secure the retreat of his patrols reconnoitring beyond the river Mole.

I think that if I direct my cavalry therefore, whilst posting a strong standing patrol in Esher or at the bridges, to reconnoitre to the north and west, and with the infantry take up a line of observation and resistance from Rye House through Stoke to Stoke House, I shall be doing the best thing with the troops at my disposal.

The advantages are that the line of resistance runs along a well-defined ridge; with a good field of infantry fire and buildings, &c., add to the strength of the position.

The Rye stream on my left flank could probably be easily flooded by damming up the stream at the railway.

The position at Stoke commands all the ground to the north within about one mile.

The extent of the position is probably suited to the advanced guard in rear. There are good artillery positions, while those for the enemy are less good and commanded by mine.

These appear the main advantages. The main disadvantages are:—

Esher forms a dangerous place on my left flank, and would have to be held to deny it to an enemy.

The Marley stream, unless it is fordable everywhere, divides one portion of the position from the other. The S.W. Railway embankment, running all along the front, considerably conceals the ground north of it, and once an enemy has gained it, would enable him to mass unseen.

I have tried by my dispositions to utilise the advantages and neutralise the disadvantages, by keeping a body of cavalry stationary in Esher. I reduce the number available for reconnaissance, however, by so doing.

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Question II

For reasons explained at the beginning of this solution, no troops for this scheme have been placed on the map.

The following, however, are the dispositions :—

About one troop of cavalry is reconnoitring to the north with another in support, another troop is reconnoitring to the west beyond Esher, while the fourth troop holds the two bridges over the river Mole near Esher. Of my infantry, No. 1 piquet is at Rye House with support at east end of Claygate ; No. 2 piquet is in Red Wood with support close behind; No. 3 piquet at the northern edge of Stoke ; and No. 4 piquet at Stoke Farm with a support for Nos. 3 and 4 piquets in Stoke village. No. 5 piquet is in Stoke Court with its support close behind. Each piquet is of the strength of half a company, and the supports are equal to the piquets, so that there are five companies in all—on piquet and support. This will leave three companies available for reserves, two of whom might be posted behind the centre of the position, and the third on the left flank in Claygate. Piquets in all cases and their sentries remain well concealed. The two guns might remain behind the Mount, having taken the range to the principal railway crossings. Piquet posts should be strengthened.

Question III

In case of attack the line of observation now held by the piquets will be the line of resistance ; the supports moving up to reinforce their piquets and the reserves to whichever point they may be most required. The cavalry when driven in will endeavour to hold the two Mole bridges, and guard against any turning movement by that flank. If forced back from the bridges they will concentrate in Esher. The guns keeping their position well concealed will fire on whatever points offer a good target.

The position must be held until the remainder of the advanced guard come up and reinforce the outpost line. Piquet posts will be artificially strengthened and the field of fire cleared if necessary.

(Sd.) A. B., Lt.-Col.,
Commanding the Outposts.

Quite apart from the possibility of a turning movement from the west, if when the cavalry fall back they concentrate in Esher, they can operate advantageously from that point on the flank of

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an advancing enemy, and everything tends to show that the action of cavalry will, in the future, largely lie in holding points on the flanks, and in guarding against and frustrating hostile turning movements.

It might be necessary to back the cavalry up with infantry, but as I am told that the left of my section extends from the Rye stream through Stoke, I do not think that I am at liberty to detach infantry to Esher and the bridges at the outset.

Question IV

The following is the answer which the Examiner suggested as appropriate :—

"The main body is marching on London from Epsom. I am placed at 10 P.M. in charge of a force (*vide* question) with orders as detailed in the "General Idea." It is clear that the main body is to continue its march on London, and that the responsibility rests on the force under my command of preventing its molestation by a body of the enemy reported to the General Officer Commanding as advancing from the west in the direction of the Mole.

"I am to start at daybreak, and I may therefore assume that the G.O.C. is in possession of information, from which he knows that the enemy is at such a distance from the river Mole, that, marching at daybreak, I shall be in time to reach the bridges on that river, and make my dispositions before the enemy can possibly forestall me.

"*A reasonable and fair assumption which you are entitled to make, for had the G.O.C. not been certain that your force, marching at the hour named, would be in plenty of time, he would order you to march earlier. In many of the answers to this question, officers have made the most unwarrantable assumptions, namely, that the enemy's strength is so and so, when there has been no means of getting in touch with them and ascertaining this to be a fact.*

"I am to refuse the passage of the Mole to the enemy at all hazards; to do this, it is clear I am at liberty to destroy the bridges if necessary, and that this is left to my discretion.

"*There can be no doubt of this. The objective of the main body is clearly London, and no question of a retirement across the Mole has arisen, the one great object for the detached force is to see that the main object is not interfered with.*

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"Having come to the above conclusions, my course is clear. I push on my cavalry, mounted infantry, and artillery, the latter with a small escort, to take up positions on the east of river, the two former beyond the Mole, to gain touch with the enemy and time to prepare the bridges for demolition, and the position for defence.

"70 *marks were allotted for this question, and rather more time therefore could be expended on this than on the other questions with advantage. If short of time, however, this latter part might have been omitted, and credit would most certainly have been given by the Examiner for a good answer.*

"I reconnoitre both banks of the river, bring all boats to the east bank, and endeavour to obtain information of all possible crossing places. I measure ranges, and take all the usual steps to ensure a good defence, which must necessarily be a passive one, and finally I should make my arrangements for an orderly retreat.

"Questions 5 and 6, it will be seen, complete the matter, and no details whatever are contained in the answer to No. 4."

Question V

The dispositions I propose are as follows:—

At daybreak precisely, the troop of cavalry (less 1 section), the mounted infantry, and the battery of artillery start from Claygate on Esher. I order the Officer Commanding this force to utilise his cavalry for reconnoitring west of the river Mole in order to ascertain in which direction the main portion of the enemy appears to be marching.

It must not be lost sight of that in forcing a river passage the enemy is pretty sure to make feints at various portions of the river, with a view of deceiving me as to his real intentions, and that my best method of guarding against this is to watch and be able to dispute likely points of passage by suitable detachments, keeping one or more bodies of troops in central positions ready to proceed to whichever point appears to be the one where the enemy is going to try and make his main crossing. It is true that according to the map that portion of the river Mole within its limits is only bridged at two places; but the enemy may have pontoons or may improvise means of crossing, and in a case like this no contingency should be overlooked.

If this is so, and pending the arrival of the infantry proper, I would suggest to the Officer Commanding the mounted force

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that he should send the bulk of the mounted infantry to guard that portion of the river north of Esher Paper Mills (the cross-roads at the northern corner of Ditton Nursery seem a suitable point); and with the remainder of the mounted infantry guard the two bridges at Esher and form an escort to the R.A. During the cavalry reconnaissance the two bridges should be prepared for demolition by the cavalry pioneers. A suitable position for the artillery will probably be found near the Court, though possibly not for the two batteries massed. I should follow up the mounted troops with the two battalions of infantry as speedily as possible, and on arrival make one half battalion responsible for Esher Bridge, with the other half battalion in reserve in Esher; and another half battalion responsible for Esher Railway Bridge with *its* other half battalion in reserve near Esher Station.

These two half battalions in reserve would be under my immediate direction, and would be available either for reinforcing their own half battalions, or for moving rapidly from their central positions to points north and south where they might be required.

The arrival of the infantry would free the mounted infantry near Esher to move out in support of the cavalry already reconnoitring west of the river.

QUESTION VI

Flank Guard Orders by Colonel A.

CLAYGATE,
1st July, 10 P.M.

I. A force of the enemy is marching from the west in the direction of the bridges over the MOLE at ESHER. Our main body continues its advance on LONDON at 3.30 A.M. to-morrow.

II. Colonel A. has received orders to act as a flank guard and refuse the passage of the MOLE to the enemy at all hazards, gradually forming from a flank guard into a rear guard as our main body advances.

Vanguard—
O.C., Lt.-Col. B.
1 troop cavalry (less 1 section).
150 Mounted infantry.
No. 1 Battery, R.A.

III. The O.C. vanguard will march at 3.30 A.M. and move as fast as possible to ESHER, where he will be joined by another troop of cavalry and another battery. He will leave his batteries

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Main Guard in order of march.
O.C., Lt.-Col. D.
1 Section cavalry.
No. 1 Battalion.
No. 2 Battalion.

on this side of the river, under suitable escort, utilise his mounted infantry for guarding the two bridges until the arrival of the main guard infantry, and also detach a force of mounted infantry to the neighbourhood of DITTON NURSERY to guard against any attempt at crossing the river north of the S.W. Railway.

The cavalry will reconnoitre for the enemy to the west of the river; and the bridges are to be prepared for demolition, but not destroyed without further instructions.

All boats are to be brought to this side of the stream.

IV. The main guard will march at 3.30 A.M. (starting point, eastern exit of CLAYGATE) to ESHER market-place, where further instructions will be given.

V. The second line transport will accompany that of the main body, marching in rear of it.

VI. One day's cooked rations will be carried, and hot coffee and biscuits will be issued before starting.

VII. The O.C. will march with, and after arrival at ESHER, will be found near No. 1 battery.

By Order,
(Signed) E. F.,
Major.

Dictated to Adjutants and representatives of units.

QUESTION VII

This matter is treated of in the Appendix to Sherston's *Tactics*, on *North-West Frontier Warfare*.

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SCHEME (WITH SOLUTION) No. VIII., MAP No. VIII

SPARE MAP, No. VIII.*a*

TACTICS

[3½ hours allowed—300 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

The whole paper should be attentively considered before any single question is attempted.

NOTE.—*Officers are reminded that,* for examination purposes, *it is necessary to state fully the* considerations *and* reasons *which influence them in deciding on particular dispositions, particular orders, or particular action.*

Questions 1 to 4, both inclusive, have reference to the accompanying map.

The country shown on the map is open, arable and pasture land, few fences except in the immediate vicinity of the villages.

The river Brain is fordable, but its high steep banks make it a considerable obstacle, especially to mounted troops; vehicles can cross it only by the bridges. The other streams shown are fordable.

QUESTION I. FOR CAPTAINS AND INDIAN ARMY LIEUTENANTS ONLY

A convoy is moving from Chatfield to Mersea in a friendly country.

The convoy consists of 80 country wagons, 2 horses each, with 1 civilian driver, occupying at least 1000 yards of road and containing provisions and ordnance stores.

Escort, 1 squadron cavalry, 1 company mounted infantry, and 1 battalion infantry, all under the command of Lieutenant-Colonel X.

The enemy's forces are generally in a north-west direction.

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At 4 P.M. on 1st March 1904, the convoy, after a long march, arrives at the cross roads 300 yards south of Bocking, where Lieutenant-Colonel X. has determined to halt for the night. The convoy is parked to the south of the village and outposts are placed.

A cavalry patrol under Lieutenant A., sent out to reconnoitre northwards, on approaching the village of Witham sees a hostile patrol leaving it, pursues and captures one prisoner, who states that his regiment, the 4th Dragoons, with another cavalry regiment and a battery of artillery arrived this afternoon at Q., a village on the Malden-Witham road about 7 miles from the latter place.

Lieutenant A., who knows the country, after sending back the prisoner under escort with a report to Lieutenant-Colonel X., follows up the hostile patrol; but at about 3 miles beyond Witham is checked by fire from a stream crossing the road. He then determines to leave a few men to watch this party of the enemy, and himself with 2 men to make a detour in the dark and endeavour to approach the village of Q.

Lieutenant A.'s report and the prisoner reach Bocking at 7 P.M., by which hour Lieutenant-Colonel X. has also received reports that no enemy has been seen in Braintree or in Gosfield and the country to the south of it.

At 9.30 P.M. a reliable inhabitant of Witham arrives at Lieutenant-Colonel X.'s headquarters and confirms the statement of the prisoner as to the presence of the enemy's mounted troops and some artillery at Q.

During the night no signs of the enemy are reported by the outposts and no further report from Lieutenant A. is received.

State the proposed arrangements of Lieutenant-Colonel X. for the 2nd March in the form of orders, &c., issued by him, together with a statement of the reasons for the same. (60 marks.)

QUESTION II. FOR ALL OFFICERS

Mersea, 20 miles to the east of Braintree, a fortified post on a Line of Communication in a friendly country, has been attacked by an eastern force. The attack was repulsed, but the post is still invested by a considerable force of the enemy and ammunition is believed to be running short.

Two columns are despatched for its relief, one commanded by Lieutenant-Colonel B. from Chelmsford and the other under Colonel C. from the south.

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These columns have been ordered to concentrate on 1st March 1904 at Ongar, 3 miles south-east of Stebbing, and thence advance to the relief of Mersea. Lieutenant-Colonel B.'s column consists of—

2 Squadrons cavalry,
1 Company mounted infantry,
1 Battery field artillery,
2 Battalions infantry,

and is moving on the Chelmsford Elton-Farm Braintree road.

The route of Colonel C.'s column, the stronger of the two, lies entirely to the south of the country shown on the map, and is altogether on the left bank of the river Brain, which makes a sharp bend and flows in a south-west direction immediately after leaving the south of the map.

The advanced guard of Lieutenant-Colonel B.'s column consists of—

2 Squadrons cavalry,
½ Company mounted infantry,
4 Companies infantry.

Lieutenant-Colonel B. is with the main guard, and the main body of his column is following at a distance of about 1200 yards.

The second line transport of the column is close behind the main body, and with it are 10 wagons containing ammunition for the Mersea post.

At 11 A.M., when the main guard is 2½ miles west of Elton Farm, the Officer Commanding advanced guard receives the following message from Officer Commanding his mounted troops, which he hands to Lieutenant-Colonel B.

"Near Elton Farm, 10.40 A.M., 1st March 1904. On nearing river Brain fire opened on my centre advanced party from outskirts of Braintree, supported it and drove about 25 enemy's mounted infantry from town who retired towards Gosfield; on following heavy rifle fire opened from high ground on left bank east of Braintree; am holding crossings in the town with about one squadron, remainder working round to North and South. Small party of enemy also in Marl village.

"No report yet from officer's patrol sent towards Colonel C.'s column, but a few rounds of artillery fire heard in the direction of Goring at about 10.20 A.M."

Directing the advanced guard to follow without delay,

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Lieutenant-Colonel B. rides forward with a few mounted infantry towards Elton Farm, on the way he receives the following message from Colonel C.:—

"Nearing Goring (5½ miles south-east of Cheam), 10.30 A.M., 1st March 1904.

"Your message of 8 A.M. to-day received. I am opposed on the stream crossing the Cheam-Dunmow road about 1 mile north-north-east of this by a force which I estimate at 2 battalions infantry, a battery and about 1 regiment cavalry, which I shall attack as soon as my infantry is up, probably about noon. My cavalry informed by inhabitants that some 300 mounted men of the enemy with a gun or pompom passed Stebbing going west from direction of Mersea at about 9 A.M. this morning. Move so as to if possible come on flank and rear of force opposing me."

On reaching the high ground near Elton Farm Lieutenant-Colonel B. finds a portion of his mounted troops engaged in dismounted fire action just east of Braintree, a small party are holding the edge of the road on the right bank opposite Marl, and firing is heard in the direction of Upper Mill.

Movements of a few men are made out in the neighbourhood of Hill Farm and South Copse, but no signs of any entrenchments or of guns are seen.

A Staff Officer sent to height 760, west of Hollows Farm, reports shortly afterwards that about half a squadron of our cavalry has just driven off a small party of the enemy who were watching the bridges west of Cheam.

Write an appreciation of the situation, and detail the measures taken by Lieutenant-Colonel B. and the orders issued by him. (80 marks.)

QUESTION III. FOR LIEUTENANTS, BRITISH SERVICE, ONLY

A force consisting of 2 squadrons cavalry, 1 battery field artillery, and 2 battalions infantry is moving northwards from Dean towards Colchester by the road on the right bank of the river Brain in a friendly country.

Malden has been occupied by an enemy in strength, and small parties of his cavalry have been seen to-day on this and the Chelmsford Roads.

The following is the order of march:—

Advanced guard. .	1½ Squadrons. 4 Companies 1st Battalion.

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Main body . . .	4 Companies 1st Battalion. 1 Battery Royal Field Artillery. 2nd Battalion less 4 companies.
Rear guard . . .	Second line transport. 1 Company 2nd Battalion.
Left flank guard .	2 Troops cavalry. 3 Companies 2nd Battalion.

Supposing that the units are of the strength and are equipped with first line mule transport, as laid down in *India Field Service Regulations*, except that all ranks of the infantry are carrying their great-coats—

(*a*) Calculate the time taken by the main body to pass a given point.

(*b*) You are in command of the left flank guard, strength as above; describe your dispositions at the moment when the head of the main body is entering Braintree, supposing that so far you have not come in contact with the enemy, and show them on the map in blue. (60 marks.)

Question IV. For all Officers

The *main body* of the force mentioned in Question III. enters Braintree at 1 P.M. on 1st March 1904, and the officer commanding the force receives a telegram ordering him to halt at Braintree; that he will be joined there at about 5 P.M. on 1st March by a column from Dunmow of equal strength to his own; the whole to move under his command towards Colchester on 2nd March; and informing him that a considerable portion of the enemy's troops at Malden are reported to be moving south to-day towards Chelmsford (12 miles west of Braintree).

Detail the measures taken for the location of the combined force on 1st March, and for its security by day and by night, *day* arrangements to be shown on the map in *red*, night in black. (65 marks.)

Question V. For Captains and Indian Army Lieutenants only

Any *one* of the following may be answered, but only one:—

(*a*) Before distributing troops for a defensive action the officer commanding should cause all ground in the vicinity of the proposed position to be carefully reconnoitred.

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In the case of a large force, what means has he usually for making such a reconnaissance?

What are the chief points to be noted in making it, and what steps during the ensuing action should the officer in command take to ensure continuous observation of the enemy's movements, and to prevent such on the part of the enemy as far as possible?

(*b*) Discuss the strength, composition and action of the rear guard to a retreating but undefeated *force* which is being vigorously pursued.

(*c*) For what objects are night marches usually undertaken?

What preliminary steps should be taken, how should a column of all arms be formed and protected during the march, and what should the arrangements be as regards maintenance of connection, pace, and halts? (45 marks.)

QUESTION VI. FOR LIEUTENANTS, BRITISH SERVICE, ONLY

Any *one* of the following may be answered, but only one:—

(*a*) What are the duties of the commander of an outpost squadron or outpost company?

(*b*) What are the rules given in *Combined Training*, 1902, regarding the transmission in the field of verbal and written messages?

(*c*) "Artillery detached or pushed forward into action requires protection against surprise or attack."

From what arm should the escort be if possible provided?

Under whose orders is it, and as commander of the escort, what considerations should guide you in determining its position and distribution both when the guns are moving into position and after they have come into action? (45 marks.)

QUESTION VII. FOR ALL OFFICERS

BUSH FIGHTING

All the following to be answered:—

(*a*) Discuss the questions of the composition, strength, personnel, order of march and distribution of a punitive column sent against a jungle tribe on a frontier of India.

(*b*) What should be the action of the advanced guard of such a column on finding the enemy in force in front?

(*c*) How should camps be formed in bush operations, and what are the arrangements recommended for their defence by day and by night? (50 marks.)

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SOLUTION No. VIII., MAP No. VIII

QUESTION I

March Orders by Lt.-Col. X., &c.

Independent Cavalry.
O.C., Major A.
3 Troops cavalry.
1 Company mounted infantry.

Advanced Guard.
O.C., Major B.
1 Section cavalry.
1 Company No. 1 Battalion.

Left Flank Guard.
O.C., Major C.
1 Section cavalry.
2 Companies No. 1 Battalion.

Right Flank Guard.
O.C., Captain D.
½ Section cavalry.
½ Company No. 1 Battalion.

Main Body, Second Line Transport and Convoy in order of march.
½ Section cavalry.
1 Company No. 1 Battalion.
40 Wagons.

Second Line Transport.
2 Companies No. 1 Battalion.
40 Wagons.
1 Company No. 1 Battalion.
½ Section cavalry.

Rear Guard.
O.C., Captain E.
½ Section cavalry.
½ Company No. 1 Battalion.

BOCKING,
1st March 1904, 11 P.M.

I. A hostile force, believed to consist of about two regiments cavalry and one battery artillery, has reached Q. village, 7 miles NW. of WITHAM.

No enemy has been seen in BRAINTREE or in GOSFIELD or south of these places.

II. The convoy will continue its march on MERSEA to-morrow.

III. As the steep banks of the river BRAIN render it a considerable obstacle to cavalry, and artillery can only cross it at the bridges, Major A. will endeavour to seize the bridges at BRAINTREE, the UPPER MILL bridge, the bridge next above UPPER MILL, and the bridges west of CHEAM, and prevent the enemy from crossing the BRAIN; blowing up bridges if necessary. If the enemy succeed in crossing the BRAIN, the independent cavalry will protect whichever flank of the convoy is most threatened.

The independent cavalry will move at 4 A.M.

IV. The advanced guard will move one mile ahead of the main body and convoy *viâ* CHEAM, and thence by the road to MERSEA about one mile south of STEBBING.

V. The left flank guard will move parallel with the convoy, about one mile north of it, and follow approximately the road running north through BOCKING and thence *viâ* MARL village, fording the river, and on by SOUTH COPSE, HILL FARM, skirting the southern edge of STEBBING.

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VI. The right flank guard will march approximately parallel with the convoy, across country where necessary, about three-quarters of a mile on its right flank.

VII. The main body convoy and second line transport will march at 4 A.M. and follow the advanced guard. Starting point, cross roads 300 yards south of BOCKING.

VIII. The rear guard will follow three-quarters of a mile in rear of the convoy.

IX. Each company will furnish a convoy guard of ten men, one man to accompany each convoy wagon.

X. Units will arrange to give each man hot coffee and biscuits before starting.

XI. Lt.-Colonel X. will march immediately in rear of the main body and convoy.

By Order,

F., *Staff Officer.*

Dictated to representatives of corps.

REASONS

As both the prisoner and the reliable inhabitant of WITHAM agree as to a force of cavalry and artillery being in Q. village, the information is probably correct. As no further report has been received from Lieutenant A., he is probably watching the enemy and waiting till daylight to estimate his strength, or, on the other hand, he may have been captured.

The enemy have clearly some guns at Q., whether a whole battery or not is uncertain; in any case, Lieutenant-Colonel X. has none, which is a great disadvantage.

If Lieutenant-Colonel X. can forestall the enemy (by means of his independent cavalry) in reaching the river Brain bridges, the hostile artillery may be prevented from crossing for some considerable time, though sooner or later the hostile cavalry, being in considerably greater numbers, will effect a crossing, and thus enable the battery to follow.

Lieutenant-Colonel X.'s cavalry and mounted infantry starting before daybreak, and being nearer the bridges, should reach them

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first, and if the mounted infantry hold the bridges, the cavalry pioneers might blow up some of them, while cavalry officers' patrols reconnoitre for the enemy and endeavour to ascertain the point for which he is making. The river being difficult for cavalry to ford and all bridges held, the hostile advance beyond the river may be very considerably delayed.

It is the action of the hostile artillery which is most to be feared, and to avoid the possibility of the convoy being shelled before it has crossed the river Brain, I decide on marching in the dark, so as to be well across the river and out of range from the right bank before it is light enough for the guns to be utilised.

It is true I have had a long march on the 1st March and the convoy horses may be done up, and harnessing up and marching in the dark has many disadvantages. It is, however, a still greater disadvantage to be shelled by artillery in country eminently adapted for its employment and at ranges to which I cannot reply.

I may be able to get, by payment or impressment, fresh horses in Bocking, Cheam, or Stebbing, from the former place on arrival, and from the two latter places while on the march, by sending an officer ahead. In this manner I may be able to replace used up animals, or to harness leaders to some carts, as the case may be.

Daybreak in England at the beginning of March is at 5 A.M., hence I start at 4 A.M. so as to cover the distance, which will take me out of artillery range before it is really light.

Once I am across the river, the road chosen for the convoy is in a large measure concealed from the N.W., and if the ground permits and the carts are sufficiently well horsed, I shall try and pass across country south of the hill round which contour 660 runs, E.N.E. of Cheam.

I provide an advanced guard, left flank, right flank, and rear guard, with a very few cavalry troopers to each. The road chosen for my left flank guard is for the most part well adapted for defence.

I do not anticipate an attack on my right flank, but it seems well to have a small guard on that flank.

On whichever side I am attacked, the greater part of the infantry with the convoy will move out to meet the attack, so that the fight may take place well away from the convoy, which will form up, or park, or move on according to circumstances and the nature of the attack and the ground.

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As the left flank and rear of the convoy seem the most vulnerable points, I myself march in rear of the convoy. This will also facilitate the delivery of messages from the independent cavalry.

Question II. Appreciation

The Eastern force is investing a fortified post; the ammunition of the defenders is believed to be running short.

If this is so, it is urgently necessary that Lieutenant-Colonel B. and Colonel C. with their combined forces should relieve the post without loss of time. If it is assumed that Colonel C.'s estimate of the strength of the force opposed to him is approximately correct, as also the information gained by Lieutenant-Colonel B.'s cavalry and that supplied by a prisoner and by friendly inhabitants, then it is probable that the O.C. Eastern force is attempting to contain or hold back Lieutenant-Colonel B.'s column and to prevent his crossing the river Brain, while with the larger portion of the force detached to stop the relieving columns he hopes to repulse Colonel C.'s column. If he succeeds in defeating Colonel C., he will possibly be able, while he leaves a small force to contain the defeated column, to co-operate with the force already containing Lieutenant-Colonel B.'s column, and crush this force by superior numbers, or at all events prevent its junction with Colonel C.

In other words, the main object of the commander of the Eastern force is to defeat Lieutenant-Colonel B. and Colonel C. *in detail*, and not allow them to join hands.

If, on the other hand, Lieutenant-Colonel B.'s column successfully crosses the river Brain, so as to operate on the flanks and rear of the force opposing Colonel C., then the two columns will probably be able to effect a junction, and thus be in sufficient force to overcome further resistance and to successfully relieve the invested post.

Measures taken by Lieutenant-Colonel B.

Lieutenant-Colonel B. has ridden forward ahead of his main guard to the hill immediately west of Elton Farm, and while there receives the report of his staff officer that half a squadron of his own cavalry has driven off a small party of the enemy who were watching the bridges west of Cheam.

Whether or no all the hostile troops who were holding the

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bridges west of Cheam have vacated that village is immaterial, for the bridges have been secured, and when infantry and guns arrive, the small party, if still in Cheam, will be forced to vacate it. Their retreat, moreover, will be threatened by the cavalry, one squadron of which is already at Braintree. I am therefore justified, I think, in regarding Cheam as practically in possession of Lieutenant-Colonel B.'s troops, and he can effect a crossing there comparatively unopposed.

He sends two mounted officers by different roads (in case one should be captured) to Colonel C. to inform him that he is going to cross at Cheam and that he has only a small force of mounted troops opposing him, and that leaving another force to hold back these troops and thus guard his left flank and rear, he will march at the utmost speed so as to take the force opposing Colonel C. in flank and rear, as suggested by the latter officer.

To effect this change of direction he sends orders to the officer commanding his mounted troops that he is to try and secure an unmolested crossing for the new advanced guard, and for the main body, at Cheam, by holding the high ground north and north-east of that place, and to then constitute himself a temporary flank guard to the column, which is going to march by the Goring road on leaving Cheam.

Lieutenant-Colonel B. forms the main guard of the old advanced guard into a new advanced guard, adding to it all the remaining mounted troops available—*i.e.* about half a company of mounted infantry—to constitute a vanguard, and he orders the battery to trot on and join the advanced guard, because from the hill just west of Hollows Farm the ground north of Cheam can be shelled if desired.

If, as is probable, the two roads shown on the map immediately west and north-west of Bocking and leading from Chelmsford, converge, or have a road connecting them within a short distance from Bocking, then it will be easy to divert the main guard if there is time, and certainly the main body on to the southern road. I am assuming in the orders which follow that there has been time to divert both, an order having been sent back at a gallop.

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ORDERS BY LIEUTENANT-COLONEL B.

March Orders No. 2, by Lt.-Colonel B.

Advanced Guard.
O.C., Major C.
½ Co. mounted infantry (less one group).
4 Companies No. 1 Battalion.
Battery R.F.A.

Left Flank Guard.
O.C., Major D.
2 Squadrons cavalry.
½ Company mounted infantry.
2 Companies No. 1 Battalion (to join on arrival at CHEAM).

Main Body in order of march.
½ No. 2 Battalion.
10 ammunition wagons.
Second line transport.
½ No. 2 Batttalion.

Rear Guard.
O.C., Captain E.
2 Companies No. 1 Battalion.
1 Group mounted infantry.

ELTON FARM,
1st March 1904, 11.15 A.M.

I. The cavalry of the advanced guard has been opposed while crossing the river BRAIN by hostile mounted infantry at BRAINTREE, MARL, and CHEAM. Strength of enemy believed to be about 300 with one gun or pompom. Our cavalry are now holding BRAINTREE and the bridges west of CHEAM. A body of the enemy, estimated at one regiment of cavalry, one battery and two battalions, are opposing Colonel C.'s column, which at 10.30 A.M. was 5½ miles SE. of CHEAM.

II. Lt.-Colonel B. intends to divert his march (the present advanced guard cavalry forming a left flank guard) and form a new advanced guard, and march *viâ* BOCKING and thence direct on CHEAM and on by the GORING road, so as to take, if possible, the force opposing Colonel C. in flank and rear.

III. The former distribution is cancelled, the new distribution is given in the margin.

IV. The first object of the left flank guard will be to secure an unmolested crossing for the advanced guard and main body at CHEAM, assisted by the guns with the advanced guard if necessary, and then to protect the left flank and rear of the column. Once the whole column and rear guard is safely past CHEAM the O.C. flank guard will send all the mounted troops he can spare to join the advanced guard.

V. The advanced guard will move about one mile ahead of the main body, the battery will be utilised if necessary from the high ground near HOLLOWS FARM to clear the enemy

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away from the high ground north of CHEAM.

VI. The rear guard will follow about three-quarters of a mile in rear of the main body.

VII. Lt.-Colonel B. will march at the head of the main body.

By Order,

F., *Staff Captain.*

These orders were at first communicated verbally or by separate slips to commanders concerned, the whole order being drafted pending the arrival of the advanced guard at Bocking, and then communicated at length to officers commanding corps, who were told in the case of the infantry to march as fast as possible.

Question III

(*a*) This is a question in space and time. Many similar questions to this have been answered in the appendix to Sherston's *Tactics, North-West Frontier Warfare:* Thacket, Spink & Co. The transport allowed can be found in *Indian Field Service Manual* and in British Infantry *Field Service Equipment Tables.*

(*b*) I should utilise all my cavalry, *i.e.* two troops less one section, in reconnoitring to and guarding my left flank from surprise. The map is not sufficiently extensive to admit of my showing all the cavalry on my left flank. In order to keep touch with the advanced guard and rear guard of the main body I should throw forward one section infantry and two troopers about one mile, and drop a similar force about one mile to the rear.

I should march myself with the two and a half companies of infantry and remaining troopers of the cavalry section by the road running to the east of and parallel with Bocking brook, and going through Witham. This road follows high ground and gives good positions for protecting the left flank of the main body.

I should utilise the cavalry troopers with the main guard for maintaining connection with the main body on my right and the cavalry reconnoitring to my left.

The dispositions are shown on the map in blue.

The troop of cavalry shown on the left edge of the map would probably be still farther to the east, and still farther

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beyond it would be the remaining troop less one section with its three sections probably in reconnoitring formation.

The section of infantry is thrown forward with two or three troopers in order to keep touch with the left of the advanced guard of the main body; the section of infantry and the troopers dropped to the rear similarly keep touch with the main body rear guard.

Question IV

As the enemy are reported to be moving to Chelmsford (12 miles west of Braintree) it is evidently principally from the west that danger threatens.

Braintree, where I am ordered to halt, is down in a hollow, nearly two miles away from the high ground by Witham, which offers the best position to resist an attack from the west.

Up to 5 P.M. I must find the outposts from the force mentioned in Question III.

I send the cavalry to reconnoitre in the direction the enemy are reported to be; that is, towards Chelmsford; and I place one half battalion and the battery as supports to the cavalry, as shown on the map in red. These outpost companies remain concealed, strengthen their positions to some extent, and the battery commander having selected a position, has the range taken to various important points, but keeps his battery concealed as shown on the map.

By night the main work will fall on the infantry. The battery is sent back to Braintree, the cavalry come in, and likewise go back to Braintree, but leave out standing patrols on the principal roads by which a force might advance to the attack at night.

These standing patrols would probably be some nine in number, three being to the north as shown on the map, and three as similarly shown to the south. The extent of the map does not permit of my showing those on the west.

An extra half battalion is detailed for the outposts, making one battalion in all. This battalion finds piquets, supports, and one company in reserve as shown on the map in black.

The posts are strengthened, patrols sent out as far as the cavalry standing patrols, and communication kept up with the piquets on the right and left. The reserve is a very small one, but I have already one quarter of all the infantry on outpost, this large force being necessary owing to the great distance Braintree is from the main body.

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The cavalry standing patrols should, however, give early notice of a hostile advance.

As regards the location of the combined force on the night of the 1st March, Braintree, west of the river, would be divided up into three convenient portions, and the three infantry battalions billeted in the houses. (The fourth battalion is on outposts.)

The cavalry, artillery, and transport are billeted and bivouacked east of the river, with some infantry for their immediate protection, because, if the enemy drove in the outposts and advanced on Braintree before the main body had time to reach Witham and the hill west of Elton Farm, there might be considerable confusion, and mounted troops or vehicles might block the bridges.

Question V

This is a purely book question. The answer is to be found in Sherston's *Tactics* and in *Combined Training*.

Question VI

The answers to this are similarly to be found in the early part of this book and in *Combined Training*.

Question VII

These matters are fully treated of in *Bush Fighting*, an official publication printed by the Indian Government at the office of the "Superintendent of Government Printing, Calcutta."

SCHEME (WITH SOLUTION) No. IX., MAP No. IX

Spare Map, No. I.*a*

TACTICS

[3½ hours allowed—300 marks.]

N.B.—When a candidate considers that in order to answer a question he requires more information regarding the military situation than is given by the Examiner, he may make any reasonable assumption, and it is advisable for him to do so in red ink, so as to draw particular attention to the assumed conditions.

The Examiner allows for very great difference of opinion with regard to the solution of a tactical problem.

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The *whole* paper should be attentively considered before any single question is attempted.

NOTE.—*Officers are reminded that,* for examination purposes, *it is necessary to state fully* the considerations *and* reasons *which influence them in deciding on particular dispositions, particular orders, or particular action.*

Questions 1 *to* 6, *both inclusive, have reference to the accompanying map, which for this scheme only is to be taken as* 6 *inches, and not* 4 *inches to* 1 *mile.*

On the night of 31st March the main body of a Blue force advancing from Reading *viâ* Ranmer Common and Ashurst Downs on Sutton bivouacked 13 miles west of Denbies Hall. Its advanced guard bivouacked 11 miles west of the same place.

A Red opposing force, numerically inferior to the Blues, is marching south-west from Sutton. Its advanced guard bivouacked on the same night 8 miles north-east of Old Toll Bar, and its main body bivouacked 8 miles farther to the north-east.

Sutton lies to the north-east of the Old Toll Bar.

The country is friendly to the Reds and hostile to the Blues.

The river Mole is unfordable except south of Box Hill Farm. The Dorking brook is fordable everywhere.

All bridges to the east of Brockham Bridge have been destroyed. The bridge over the river Mole to the north of the Priory has also been destroyed.

The woods are passable for infantry in scattered formation only.

The roads are bounded by hedges and ditches.

QUESTION I. FOR ALL OFFICERS

The commander of the Red advanced guard is directed to endeavour to forestall the enemy on the line of the river Mole and to delay his advance until the Red main body comes up.

No bridges are to be destroyed.

To this end he orders you to march with troops as per margin at 5.30 A.M. on 1st April.

1½ Squadron cavalry.
150 Mounted infantry with one machine gun.
1 Battery horse artillery.

Assuming that you succeed in forestalling the Blue troops on the line of the river, explain how you would dispose your troops, and show your dispositions on the map in red. (40 marks.)

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Question II. For all Officers

About 8.30 AM. the Red cavalry is forced to retire before the Blue cavalry, who, however, are unable to push across the river Mole and report the line of the river to be held by the enemy from Brockham to beyond Mickleham Park.

You are in command of the Blue advanced guard, and at 10.15 A.M. you survey the position from Denbies Hall. Your instructions are to feel for the enemy, drive him in if possible, and seize the passages over the river.

You have under your command, including your main guard, which is about 2 miles in rear, troops as per margin.

2 Squadrons cavalry.
200 Mounted infantry.
2 Batteries horse artillery.
1 Battalion infantry.

Explain how you would proceed to carry out your instructions, and give a copy of your orders. (50 marks.)

Question III. For all Officers

The Red advanced troops having been joined by the remainder of the Red advanced guard, the attempt of the Blues to dislodge them is unsuccessful, and the Blues retire from close contact.

At 2 P.M. on 1st April the Red advanced guard is relieved by troops as per margin, detailed for outpost duty.

2 Squadrons cavalry.
6 Companies infantry.

As commander of the Red outposts you are responsible for the line of the river from Brockham to the bridge south of the Priory.

Explain your dispositions for night outposts only, and show them on the map in black. (60 marks.)

Question IV. For Lieutenants, British Service only

As officer commanding any one of the piquets shown by you in answer to Question III., explain how you would tell off your men for duty, and what orders you would give in case you are attacked. (50 marks.)

Question V. For Captains and Indian Army Lieutenants

On 2nd April the Red force retires in good order towards Sutton.

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The Red rear guard consists of troops as per margin.

2 Squadrons cavalry.
400 Mounted infantry.
2 Batteries horse artillery.
1 Battalion infantry.

The cavalry move on the flanks and the "rear party" consists of 350 mounted infantry under your command. Explain on what principles you would retire, and show the disposition of your mounted infantry when the rearmost portion of it is approximately on the line Brockham House-Clerkley Wood. (50 marks.)

Question VI. For all Officers

The main body of the Blue force consists of troops as per margin, with first line transport. As staff officer, calculate how long this main body would take to defile across Burford Bridge. Calculations to be shown. (40 marks.)

2 Batteries field artillery.
4 Battalions infantry.
1 Bearer company.

Question VII. For Captains and Indian Army Lieutenants

Explain briefly the principles on which camps and bivouacs are organised in Asiatic warfare, and calculate roughly what would be a suitable perimeter for a contracted bivouac for troops as per margin.

Brigade Staff.
2 Battalions British infantry.
2 Battalions Native infantry.
1 Mountain battery.
1 Company sappers and miners.
1 British field hospital.
1 Native field hospital
Supply godown (about 30 yards × 40 yards).
2200 pack mules in brigade transport lines.

No tents, except hospital tents, accompany the force. Calculations to be shown. (60 marks.)

Question VIII. For Lieutenants, British Service only

Explain how the ordinary system of outposts is modified for the protection of camps in hill warfare on the North-West Frontier. (60 marks.)

SCHEME (WITH SOLUTION) No. IX., MAP No. IX

Spare Map, No. I.*a*

The scale of the map is to be taken as 6 *inches to* 1 *mile.*

Question I

Having reached the river Mole before Blue force, I shall utilise my mounted infantry and the battery to protect all the crossings, and several lines of retreat being then open and securely

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guarded, I should send my cavalry to reconnoitre west of the river Mole. The principal road from Reading appears to lie due west of Denbies Hall, and I therefore send half a squadron along this road, supported by the remainder of the squadron; and the other half squadron I send along the high ground by Phenice Farm towards Reading.

The battery has been placed so as to assist more particularly in the retirement of the cavalry and to cover the approaches to Pray, Burford, Box Hill Farm, and Brockham bridges. It can, of course, rapidly change its position to suit varying circumstances.

As a dash might be made by hostile mounted troops on the bridge south of the Priory, this force passing round the north of Phenice Farm plateau, the machine gun is sent to guard more particularly the bridge in question, as it cannot be so efficiently protected by the artillery as the other bridges. The exact position of the machine gun would depend on circumstances; it would probably be to the east of the village, and where it would not be exposed to artillery fire.

The mounted infantry is divided up as shown on the map, twenty-five being assigned to the defence of each bridge, except to the bridge south of the Priory, which has fifty men and the machine gun assigned for its defence; the bridge which has been destroyed and which is to the north of the Priory will also require watching.

Twenty-five mounted infantry are also left as an escort to the guns, and this escort will directly or indirectly assist in guarding the bridges in its vicinity.

The disposition of the troops is shown on the map in red. The cavalry will, of course, throw forward patrols. The map is not sufficiently extended to the west to admit of my showing these patrols.

Question II

The only part of the river which is fordable is that south of Box Hill Farm; and all the ground on the eastern bank of the river Mole commands the ground to the west, except the eminence on which Denbies Hall stands, and that is only just equal in height to the spur running west of Brockham House.

I can bring up troops unseen to Beech Copse, Danger Hill, and Updown Wood, and possibly could reach Tile House, passing through Westcott and south of Dorking, by diverting at once the infantry to the south-east before they reach Denbies Hall plateau, without their exact numbers being seen by the enemy from east

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of the river. This largely depends, however, on the cover afforded by the hedgerows, which in March will not be very thick, and on whether there is a slight knoll on the spur to the south-east of Dorking, so that the infantry could march from the south of Dorking to Tile House covered by the ground.

I shall mass my two batteries near Denbies Hall, and try to silence the hostile battery, and endeavour by a feint attack of dismounted cavalry on the Priory bridges, and a further feint on some bridge east of Brockham by part of the mounted infantry, to distract the enemy's attention and to cross the river Mole near Box Hill Farm with the infantry, their advance being covered by the two horse artillery batteries. The curve to the east of the spur north of Deepdene House and Park Farm may enable the infantry to advance north from near Tile House or Box Hill Farm and the river south-east of it, concealed in some measure from view and fire from the lower slopes of the ground north of Box Hill Farm.

The ground is not at all favourable to the infantry attack, but the positions which the defenders must occupy can be enfiladed to a large extent by my artillery from Denbies Hall.

Attack Orders by Colonel A.,
Commanding Advanced Guard, Blue Force.

DENBIES HALL,
1st April 1904, 10.20 A.M.

I. Red cavalry have retired to the east bank of the river Mole. The enemy hold all the crossings on this river from BROCKHAM to beyond MICKLEHAM PARK. The bridge north of the PRIORY and all bridges east of BROCKHAM have been destroyed. Our main guard are now about two miles in rear.

II. Colonel A. has been ordered to seize, if possible, the river MOLE passages. The river is fordable only to the south of BOX HILL FARM.

III. The cavalry will proceed to UPDOWN WOOD, utilising the ground to conceal the movement, and at 12 noon (by which time No. 1 Battalion should have reached TILE HOUSE) will, acting dismounted, execute a feint attack on the PRIORY bridges.

IV. One hundred and fifty mounted infantry will similarly and at the same time make a demonstrative attack on the bridge at BROCKHAM, crossing the river either at BROCKHAM or BOX HILL FARM if the infantry attack is successful. The other mounted infantry will furnish an escort to the guns.

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V. The two batteries will come into action near DENBIES HALL, and will endeavour to silence the hostile guns and prepare the infantry attack.

VI. No. 1 Battalion will march direct on TILE HOUSE, through WESTCOTT, moving south of DORKING, which is clear of the enemy. On arriving about two hundred yards west of TILE HOUSE, it will turn northwards and ford the river south of BOX HILL FARM. The advance from TILE HOUSE should begin at 12 noon.

VII. Colonel A. will remain at DENBIES HALL.

By order,

B.,
Staff Officer,
Advanced Guard, Blue Force.

N.B.—A mounted officer would at once gallop back to divert the infantry on Westcott. The gist of these orders first, and then the order *in extenso*, would be communicated to corps. The artillery would husband their ammunition till the infantry attack begins, but if the hostile artillery can be silenced, and the enemy's attention drawn away towards the Priory bridge feint attack before the infantry advance from Tile House develops, it will be a great advantage.

QUESTION III

As I am responsible for the line of the river from Brockham to the bridge south of the Priory, I assume that the bridge north of the Priory and the bridges east of Brockham, which have also been destroyed, are being watched by other outpost troops, and that therefore my flanks are secure.

I place the infantry piquets with supports close at hand on the *near* side of the river, except at Brockham, where I place a whole company on piquet in the village itself, because if the village is not held it will serve as a point of *appui* to the enemy.

The sentries are in all cases beyond the bridges, and on the enemy's side. Supports are close up to the piquets. The piquets and supports absorb most of the infantry, but the company in reserve is posted at Lodge Cottage, whence the trend of the roads will enable it to quickly reinforce the infantry holding the Box Hill Farm and Brockham bridges, the most vulnerable portion of the line, as the river near Box Hill Farm is fordable, and Dorking might shelter large hostile forces.

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As no further infantry is available for a reserve, I utilise one squadron of cavalry for the purpose, which can proceed rapidly to the threatened point and then act dismounted. I post it for this purpose at Juniper Hall. The remainder of the other squadron, part of which is furnishing the cavalry standing patrols, is with the reserve at Lodge Cottage.

The infantry piquets patrol constantly along the river banks, the bridges are barricaded sufficiently to prevent a rush, and a line of cavalry standing patrols is pushed out beyond the river, to give early notice of an attack, the infantry patrolling up to them.

Cavalry standing patrols are about one section strong, and their disposition is shown on the map, as well as the strength and disposition of the remaining troops.

Question IV

I will assume I am in command of the piquet at Pray bridge. The piquet would be told off for duty as follows:—

	Men.
One group finding a double sentry beyond the bridge	6
Sentry on piquet	3
Two reconnoitring patrols	12
Visiting patrol	3
	24

The group would be stationed south of the bridge, so as to enable the sentries to see and hear better, and the bridge would be barricaded if possible, space being left for the cavalry standing patrols to come in as well as for reconnoitring patrols, &c.

Two reconnoitring patrols have been told off—one to reconnoitre beyond the river and up to the cavalry standing patrol, the other to patrol along the near bank of the river.

The support would maintain communication with the piquet.

Non-commissioned officers would be told off to patrols, &c., according to the number available.

I should give orders that in case of attack the piquet would at once fall in, and proceed to take up the position for defence which should be known to every man.

The group with its sentries would fall in and join the piquet, and no firing would be permitted till the cavalry standing patrols had come in. The barricade would then be entirely closed.

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I should further give orders that the bridge must be defended at all hazards, and tell the men that the support will if necessary reinforce the piquet.

As the attack on the bridge might be only a feint intended to distract attention from a crossing to be made elsewhere, I should order the reconnoitring patrols to proceed up and down stream (or if already watching the stream on the near side, to remain doing so), and to guard against any attempt to effect a crossing above or below the bridge.

Mounted orderlies, if I have any, will keep me informed of what adjacent piquets are doing.

Question V

I imagine that the road *viâ* the Beehive also leads to Sutton, and that the cavalry on the north are watching the country north of Clerkley Wood, and on the south are watching the river Mole by Brockham, and further to the east of that place.

I should assign one hundred of my force to move along the high ground south-west of Clerkley Wood, one hundred to move in the centre, and fifty on the southern side, that is, along the spur on which Brockham House stands.

I should move with a support of one hundred, maintaining touch with all three parties, and ready to support whichever required assistance.

The flank parties would, unless in sight of the cavalry on the flanks, throw out patrols to keep touch with them, and all three parties, unless in contact with the enemy, would drop patrols in order to keep in touch with him.

The disposition of the mounted infantry has not been shown on the map, as two problems have already been illustrated on the map, but the dispositions are easily explained.

My left flank party as I retire (that is, one hundred men) have a patrol to the north keeping in touch with the cavalry, and another behind Juniper Hall, and the western edge of Clerkley Wood has been lined for defence, the horses and horseholders being concealed on the south-eastern side of the wood.

The central party are lining the road along the spur west of the wood on Ashurst Downs, and have their horses at the south-eastern corner of the wood, and keep a patrol out watching Burford bridge.

The party of fifty are behind Brockham House; they have no patrol to the south as the high ground enables them to see the

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cavalry to the south and south-east, but one patrol is out to the west at the bend of the road at the end of the spur north-east of Pixholme Mill.

The hundred mounted infantry in support are in a central position about one mile farther to the north-east from the Old Toll Bar, and can either support either of the three parties, or, what is more probable, afford them a point of *appui* on which to fall back, the support having dismounted and occupied some suitable position for this purpose. The position of the support will, however, depend largely on the position taken up by the guns, and if the artillery have good ranges and positions, and of this the extent of the map hardly enables me to judge, the mounted infantry support might be well merged in the rearmost line, probably joining the central party at the wood north of Labourer's Cottage, and the guns and their escort would then support the mounted infantry.

Question VI

	Yards.
I. One battery field artillery with 9 wagons = 15 × 20	300
II. One battery as above	300
III. One battalion of 800 men at one yard per two men × 100 yards for first line transport, and distances . . .	500
IV. Three battalions more as above, 500 × 3	1500
V. One bearer company . . .	180
	2780

2780 yards at 100 yards a minute = 28 minutes, but as there may be some straggling, say half-an-hour.

Questions VII and VIII

Similar questions to these have been fully treated of in the appendix to Sherston's *Tactics* and in *North-West Frontier Warfare.* (Thacker, Spink & Co., Calcutta; and Thacker & Co., Creed Lane, London, E.C.)

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SCHEME WITH SOLUTION No. X., MAP No. X

SPARE MAP, No. X.*a*

CAPTAINS FOR PROMOTION. MAY 1904

Military Engineering. Tactics and Topography (*d*) i.

FIRST PAPER (3 *hours*)

[*N.B.*—The organisation of all forces is that of British War Establishments. Streams other than river Isis and Wharf stream may be considered fordable by infantry anywhere.]

GENERAL IDEA

An invading army (Blue) is advancing N. through Oxford. A Red force is reported to be advancing S.E. on Oxford.

SPECIAL IDEA (BLUE)

A flank guard (strength, one squadron, two companies mounted infantry, one battery R.F.A., half company field engineers, one battalion infantry), moving by Swinford and Eynsham, has reached the guide-post about 550 yards N.E. of Farmoor, when, at 3.30 P.M. 30th May, the O.C. receives the following order:—

OXFORD,
3 P.M., 30*th May*.

To O.C. Flank Guard,
SWINFORD ROAD.

Enemy (strength unknown) was reported to be at STOW ON THE WOLD (15 miles N.W. of NEWLAND) at noon to-day. You must hold SWINFORD BRIDGE, strengthening your position by every means in your power, but do not destroy the bridge unless absolutely necessary Half company field engineers from here will reach you at SWINFORD BRIDGE at 4.30 P.M. You cannot rely on receiving further support till this time to-morrow.

By Order,

A. B., *Staff Officer*

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At 4 P.M. O.C. flank guard receives the following report :—

To O.C. Flank Guard, EYNSHAM, OXFORD ROAD.

BARNARD GATE, 3.45 P.M., *30th May.*

Enemy's mounted troops between COGGES WOOD and HIGH COGGES. Two battalions of his infantry reported to be approaching MINSTER LOVELL (3 miles W. of NEWLAND).

C. D., *O.C. Cavalry.*

EXERCISES

1. You are in command of the Flank Guard.
   (*a*) Describe the order in which your force would be moving at 3.30 P.M.
   (*b*) State clearly what you would do on receipt of the above order, and report. (125 marks.)
2. (*a*) Describe in detail the means you would employ to render the Swinford position secure as ordered.
   (*b*) Show (in black) on the map the plans of any field defences you consider should be made, and draw a carefully figured profile of each.
   (*c*) Calculate the strength of the working parties and the number of tools required to carry out each portion of the work proposed.
   (*d*) Name the hour at which each portion of the work would be commenced and completed.
   [*N.B.*—No civil labour or tools available.] (250 marks.)
3. Show in detail on the map (in red) the disposition of your force during the nights of the 30th and 31st May, assuming that an Infantry Brigade of the enemy reached Newland at 9 P.M. 30th May. (125 marks.)

SOLUTION No. X., MAP No. X

SPARE MAP, No. X.*a*

First Paper

The map actually given to the candidates was the six-inch Ordnance Survey Map, sheet xxxii., sheet i. Oxfordshire, comprising the Eynsham and Newland country.

It has not been possible to reproduce the actual map, which is however obtainable for a small sum from Messrs. Stanford & Co.,

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Cockspur Street, London; or any firm of booksellers can procure it in a few days from London.

The map given is a copy of the main features, omitting all unnecessary detail.

Exercise I.*a*

The order in which I should be marching would be as follows.

My main guard, which has reached the guide-post about 550 yards N.E. of Farmoor, would be moving in column of route on the road in the following order, viz. :—

(1) One group mounted infantry.
(2) Four companies infantry.
(3) The battery field artillery.
(4) Half a company field engineers.
(5) Whatever 2nd line transport there is (but this will probably have been reduced to a minimum).
(6) Three companies infantry.

About one mile ahead on the road over Swinford Bridge will be a small advanced guard, with one group mounted infantry and half a company infantry; and a small rear guard of similar strength will follow the main guard about one mile in rear. In each case the mounted infantry will send a couple of men on ahead or drop them to the rear, as the case may be. In open country these parties would keep touch with the advanced and rear guards found by the main body, and in close country will do so when practicable.

The remaining mounted infantry and the cavalry will be marching further to the west, and on my left flank, the whole under one command.

The cavalry would probably do the reconnaissance, a troop being sent along the roads leading to Newland, one by Barnard Gate, another through South Leigh, the remaining half troop supporting them.

The mounted infantry would act as a further support, and when the main guard moves along the road running due north from Eynsham, the mounted infantry must move roughly parallel by the road running N.W. from Eynsham by Bowles Farm, Lower Farm, and East of Freeland Lodge.

Exercise I.*b*

Immediately on receipt of these orders I send word to my cavalry commander to tell him I am going to halt in Swinford,

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and that he is to maintain touch with the enemy's mounted troops, and that I am sending two infantry companies into Eynsham. I further send orders to the small advance party not to proceed further than the railway, and to place a guard on the bridge over the Wharf Stream at Talbot Inn; and to allow none of the inhabitants from Eynsham to cross into Swinford.

I proceed with the main guard into Swinford and let the rear party close up, and send on two companies to Eynsham. I direct the field engineers to at once begin to prepare the Wharf Stream Bridge and Swinford Bridge for demolition, so that in case of *absolute necessity* I may blow up these bridges, if I find it impossible to prevent their capture.

I further direct the engineer officer to see if the Wharf Stream and its affluents south of the Swinford-Eynsham Road can be rendered deeper and a greater obstacle by damming them at the bridge near Talbot Inn, and I direct him to send men to remove and destroy the small bridges along the Wharf Stream from the Talbot Inn bridge, up stream, as far as Langley Weir, West of Farnmoor. Pinkhill Lock and Langley Weir must also be rendered useless as a means of crossing.

The other half company will, on arrival, assist in this work; and any boats, barges, &c., by which the Wharf Stream can be crossed, are to be sunk; and if, by destroying the lock gates where the canal about 1200 yards down stream from Swinford bridge enters the Isis, the old canal can be rendered unnavigable, this lock must be demolished by blowing away the sluices and gates, or by removing them. The bridges, locks, weirs, &c., where a crossing might be effected, and which are to be demolished, are shown on the map by crosses.

The Wharf Stream Weir, however, must not be destroyed unless the stream can be dammed South of the Swinford-Eynsham Road.

I then consult with the battery commander as to the best artillery position for enfilading the road from Eynsham to Swinford; and, Beacon Hill having been selected, I direct him to make gun epaulements there, if he considers necessary.

As regards cover for infantry, there is a small salient about 200 yards N.E. of Swinford, and another about 150 yards to the S.W. of the village. These positions will be clear of the line of fire from the guns, and might be advantageously occupied by infantry in trenches to bring rifle fire to bear along the Swinford-Eynsham Road.

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The battery commander will, of course, have the ranges taken to likely hostile artillery positions.

The arrangements for security at night will be described in the answer to Question III.

As the cavalry and mounted infantry are already out to the front, and the commander has been acquainted with what I am doing, I think my working parties, field engineers included, will be sufficiently guarded, particularly as I have half a company of infantry at the Wharf Stream Bridge and railway west of it; and I have sent two companies of infantry into Eynsham to barricade the roads leading into the village from the west, north, and south, and to act by day as a support to the cavalry and mounted infantry, establishing look-out posts on the church tower and keeping in signalling communication with me.

The commander of these two companies will have orders, as Eynsham is in a hostile country, to disarm the inhabitants, to confine them to their houses after 7.30 P.M., to permit no lights (as by means of them the enemy may be signalled to), and to keep the mayor and other leading inhabitants, if necessary, under surveillance as hostages for the good behaviour of the inhabitants.

The measures to be taken regarding the defence of the village and the outposts are described in Questions II. and III.

Whilst I am riding on to Beacon's Hill, and surveying the position generally, opportunity will be taken to let the troops eat their evening meal, and rest a little preparatory to beginning work on the defences.

Question II. is an engineering question, but as this is the first paper in which Tactics and Military Engineering have been combined in the same paper, it may not be amiss to answer the questions in brief.

Exercise II.*a*

The engineers, as already described in Question I.*b*, have orders to prepare for demolition the Swinford and main Wharf Stream Bridges, and to destroy or remove all minor bridges over the Wharf Stream, besides Langley Weir, Pinkhill Weir, the two weirs north of Swinford, and the lock at entrance of the old canal into the Isis.

The cavalry pioneers can assist. A cavalry regiment carries 135 lbs. of gun-cotton, so the squadron will probably have one-third of this amount; and a field company R.E. carries 420 lbs. gun-cotton.

Gun-cotton will probably be required only at the two main

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bridges, and in very small quantities at the locks and weirs, and only at the latter if means of crossing the stream exist. At a lock single men can always cross. Unless the weirs have sluices, it will not be feasible to destroy them in the time available.

The engineers are further to dam the Wharf Stream at the Talbot Inn Bridge, if by that means the Wharf Stream and affluents to the South can be rendered more formidable; this will depend on the rate of the stream and the materials available, and the stream banks. Planks are required for the dam at the bridge, and iron rails or something similar, the planks being placed against the bridge arches on the up-stream side, and kept in position by rails.

The battery commander if he considers them necessary makes gun epaulements on Beacon Hill, but he may prefer to fire by indirect laying and to keep his guns slightly back on the reverse slope.

If, however, he does make gun epaulements they will be made with the flanks well turned back; as though his battery is principally required to fire on the approaches to Swinford Bridge, he may be subjected to artillery fire from the north and west, as well as from the N.W.

The infantry make two fire trenches, one about 200 yards N.E. of Swinford and the other 100 yards to the S.W.

A similar trench is also made about 600 yards to the N.E. of Swinford to enfilade the Wharf Stream.

Some infantry also render the western edge of Stroud Copse, or a portion of it, more defensible, and the north-western edge of Hither Clay Hill Wood, where it is opposite the Old Canal.

The two companies sent into Eynsham barricade the northern, western, and southern entrances, and loophole a few walls or houses in the vicinity of each; but as Eynsham is not intended to be held *à outrance* no defensive measures against artillery fire need be taken.

Exercise II.*b*

The plans of the field defences proposed are shown on the map. Black transverse lines indicate where bridges, weirs, and locks have been demolished, but little damage can be done to weirs unless there are sluices.

Regarding the profile of the works, the gun epaulements will be of the profile shown in *Manual Military Engineering*, Plate XVII. Fig. 2; the shelter trenches of the profile shown on Plate XV. Fig. 1.

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EXERCISES II.*c* AND II.*d*

Task I.—Gun Epaulements.—Eight men can make one gun epaulement in about 2 hours, and in 2 hours more can make it still more defensible.

Six gun epaulements are required, and therefore $8 \times 6 = 48$ men, say 55 men. The battery finds 24 spades and 12 picks, but as 50 picks and 50 shovels will be required, the R.E. find the remaining tools. Total required, 50 picks, 50 shovels. Commence work 5.30 P.M. and work till 8 P.M. Complete work next day, 5 to 6.30 A.M.

The battery of course finds its own working party.

Task II.—One hundred yards of fire trench, 3 feet by 3 feet, N.E. of Swinford, and a similar length S.W. of it. Total, 200 yards or 600 feet.

With large tools one man can dig 80 cubic feet in 4 hours, and as area of work is 9 feet, $\frac{80}{9} = 9$ feet nearly, as length of each man's task.

$\frac{600 \text{ feet}}{9 \text{ feet}} = 67$ men, say 75 men, with 75 picks and 75 shovels, their own tools; work from 5 P.M. till 8 P.M., and 5 A.M. till 6 A.M.

Task III.—A fire trench same dimensions as in Task II., and 150 yards long, opposite mouth of Wharf Stream, will take 50 men, say 55 men, with 55 picks and 55 shovels—time as in Task II.

Task IV.—Improving hedge cover on Stroud Copse and Hither Clay Hill Wood.

No exact calculations can be given, but say 100 men in 2 hours—*i.e.* from 6 P.M. to 8 P.M.—each man using an intrenching pick and intrenching shovel. This work could proceed next day if necessary.

Task V.—Barricading the entrances to Eynsham village, loopholing a few walls and upper storeys of houses, and barricading the main Wharf Stream and Swinford bridges against a rush at night.

No calculations can be given. Say 50 men, crowbars, and

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bill-hooks will be required; say 10 crossbars and 20 bill-hooks, and some 5 hand-axes.

Carts upturned, barrels, boxes, wire, and sacks will all come in useful.

Commence work 6 P.M., finish 8 P.M.

In all cases where excavation is required I have allowed at least 10 per cent. spare men and some spare tools, as tools frequently break.

No calculations are given for the R.E. demolitions. If the bridges to be prepared for demolition are of masonry, and have not high and thin piers, the road metalling will have to be trenched in order that the charges may be laid on the masonry arches. This is hard work, but only a few men can be engaged on it. If, for instance, the roadway is 12 feet wide, a trench of that width must be dug, but only three men can work simultaneously in it, as they cannot work closer than 4 feet apart.

Blowing away sluice gates, locks, &c., will only take a very few men, and in a whole company there should be ample men for the work required.

EXERCISE III

The disposition of the outposts is shown on the map in red.

The six standing patrols are furnished by mounted infantry and are each two groups or eight men strong.

The four infantry piquets on the outskirts of Eynsham constantly send patrols up to the standing patrols, who in turn send an occasional patrol (on foot) to the front.

The piquet and support at the bridges cover the retirement of the force west of the river if it should be forced back by a night attack.

Mounted infantry watch the extreme flanks on the right bank of the Isis, as it is too far for infantry.

The two detached posts are formed from the half company guarding the bridges.

The total force on outposts (if I except the company in Eynsham which is supporting the piquets and which should have an undisturbed night) is one and a half companies of infantry and about 80 mounted infantry, including non-commissioned officers.

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CAPTAINS FOR PROMOTION. MAY 1904.

(*d*) ii. SECOND PAPER (3 *hours*)

(*Same conditions as on first paper.*)

GENERAL IDEA

An invading army (Blue) is advancing N. through Oxford. A Red force is reported to be advancing SE. on Oxford.

SPECIAL IDEA (RED)

A detached force, as below, arrives at Newland, after a forced march of 20 miles, at 9 P.M. 30th May, and bivouacs.

1 Cavalry regiment.
1 Brigade R.F.A.
1 Pontoon troop.
1 Infantry brigade.

At 5 A.M. on 31st May the officer commanding this force receives the following report:—

BARTLETT'S FARM,
4.30 A.M., 31*st May.*

To G.O.C. Detached Force,
NEWLAND.

Enemy's mounted patrols reported about DERRYMERRY'S BARN and LIMB BROOK. A force appears to be entrenched about BEACON HILL. One of my squadrons is at BARNARD GATE, the remainder of the regiment is here with me.

E. F.,
O.C. Cavalry Regiment.

This is forwarded to the G.O.C. Red Army Corps, which is 2 miles W. of Newland. At 6.30 A.M. the following order is received at Newland:—

WITNEY WORKHOUSE,
6 A.M., 31*st May.*

To G.O.C. Detached Force,
NEWLAND.

Seize SWINFORD BRIDGE. You must be in possession of BEACON HILL and wooded heights to the E. of it by 2 P.M. We shall move at once S.E. by DUCKLINGTON MILL and COKE-

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THORPE PARK, and crossing at NEWBRIDGE shall advance down the right bank of river ISIS.

You must not expect any support before 4 P.M.

B.O.

L.M.

C.S.O.

[*N.B.*—Newbridge is 3 miles S.E. of Hardwick and 5 miles (as crow flies) S.W. of Swinford.]

EXERCISES

1. You are in command of above-mentioned detached force at Newland.

(*a*) Describe clearly methods you would employ to carry out orders received from G.O.C. Red Army Corps at 6.30 A.M.

(*b*) Show on map (blue pencil) lines of advance of your cavalry and infantry.

(*c*) Mark your artillery positions (conventional signs in red). (250 marks.)

2. Write out the orders you would issue at Newland to the force under your command in order to carry out your plans. (125 marks.)

3. Reproduce (neatly) on scale R.F. $\frac{1}{20000}$ the square mile of country shown in SW. corner of your map. Draw scale for your reproduced plan and North point with variation 17° W. (125 marks.)

SECOND PAPER

EXERCISE I

I receive these orders at 6.30 A.M. and all I know of the enemy is that a force of unknown strength appears to be entrenched on about Beacon Hill, and that the enemy's mounted patrols have been seen about Derrymerry's Barn and the Limb Brook.

My own main body is moving round by the south, and I am told to be in possession of Swinford Bridge, of Beacon Hill, and the heights to the east of it by 2 P.M.

I imagine the enemy will be holding Eynsham at all events temporarily, and the village is too large to shell the enemy out in the time available.

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If I send part of my force to the north of Eynsham and with the remainder move south of it, my force will be separated and cannot well combine to co-operate in the attack, and there appear no good artillery positions north and north-east of Eynsham.

I decide therefore to send one squadron only round to the north of Eynsham to reconnoitre the enemy's dispositions and to move with all the remainder of my force round by the south of Eynsham and try and effect a crossing covered by my three batteries near Langley Weir.

I select this place because I see from the map that the ground to the east of it affords no cover to an enemy, and I hope with my batteries to silence any hostile guns. I should then, if I successfully cross with my infantry, advance on Beacon Hill, still covered by my guns, and this will cause the enemy to vacate Eynsham and cross the bridges on which my artillery will be firing.

Once I am on Beacon Hill my artillery will cease to be of any use to me for the time being, as the enemy will have retired into the woods east of Beacon Hill.

My cavalry and artillery will then rejoin me by the bridges at Swinford unless they have been destroyed, in which case they will have to cross by the pontoon bridge.

In the note on Paper I. it stated that other streams than the Isis and Wharf stream were fordable by infantry.

It is not quite clear from the map whether the term "Wharf Stream" only applies to the stream north of the Swinford-Eynsham Road or south of it as well, right up to near Langley Weir.

If the term applies to the stream throughout its course, my task is a much more difficult one, particularly as the bridges may have been destroyed.

Exercise I.*b*

The lines of advance are shown on the map in blue. The squadron moving in the centre covers the left flank and front of the guns. Part of the pontoon troop may be needed to enable the guns to cross the brook just west of the position, but if great delay will ensue, the guns could take up position behind the spur west of the brook.

Exercise I.*c*

The artillery positions are shown in red. Beacon Hill will probably be the first target, and then any infantry opposing our own infantry while crossing the river.

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EXERCISE II

March Orders by Major-General A., Commanding Detached Force.

Independent Cavalry.

O.C., Lt.-Col. B.
1st Hussars (less one troop).

Advanced Guard.

O.C., Lt.-Col. C.
3 Sections cavalry.
No. 1 Battalion.

Main body in order of march.

1 Section cavalry.
No. 1 Battalion.
The Brigade R.F.A.
Pontoon troop.
No. 3 Battalion.
No. 4 Battalion (less one company).
No. 1 Bearer company.

Baggage, &c., in order of march.

No. 1 Field hospital.
2nd Line transport.
No. 1 Supply column.
1 Co. No. 4 Battalion.

NEWLAND,
6.45 A.M., 31*st May* 1904.

I. A hostile force, strength unknown, is believed to be entrenched about BEACON HILL. Earlier this morning its mounted patrols were on the line DERRYMERRY'S BARN and LIMB BROOK.

Our main body is moving SE. by DUCKLINGTON MILL and COKETHORPE PARK, and crossing river ISIS at NEWBRIDGE will move down the right bank.

II. Major-General A. has received orders to seize SWINFORD BRIDGE, BEACON HILL, and heights to East of it.

III. The O.C. independent cavalry will send one squadron round by the North of EYNSHAM; with the remainder he will cover the front and left flank of the main advance.

IV. The advanced guard will continue to move 1 mile ahead of the main body.

V. The main body will move at 7.15 A.M. direct on SUTTON through SOUTH LEIGH, and from SUTTON due East on LANGLEY WEIR. Starting-point, cross-roads East of MEDLEY BROOK. As soon as the cavalry have reported all clear as far as PINKHILL FARM, the O.C. R.A. will ride on and select a suitable position for the artillery brigade.

VI. The baggage, &c., will follow half a mile in rear of the main body.

VII. The 2nd line transport, the field hospital, and supply column will halt in SUTTON with the escort.

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VIII. Orders regarding the attack will be issued when further information as to the enemy's strength and dispositions have been received.

IX. The G.O.C. will march with the vanguard of the advanced guard.

By Order.

D.,

Brigade-Major, Detached Force.

These orders, to save delay, would probably be communicated verbally. I assume the troops have made an early breakfast.

It would not be feasible for me, while still at Newland, and with such scanty information as I. have, to issue orders for the attack, or even to select the artillery position.

Exercise III. is purely a topographical question.

The scale of the map is 6 inches to 1 mile, or $\frac{1}{10560}$, and if one-inch squares are drawn on the original map, the proportionate size of the squares on the copy must be—

$$\frac{1}{10560} : \frac{1}{20000} :: 1 \text{ inch} : x$$

i.e. a little more than half the size, *i.e.* ·528 of an inch.

SOLUTION No. XI. (First Paper)

Exercise 4*a*.

Halfpenny lane is only visible to a patrol lying down at the cross-roads for about 550 yards, that is, as far as the 320-foot contour.

The remainder of the road is therefore drawn in black.

This question may be worked out as follows :—

From the cross-roads to the 320-foot contour is a gradual and concave slope, and therefore the sides of the road are visible for about 560 yards, when the lane falls steeply and disappears from view.

There is just a chance that it may be visible again after it rises, and runs along the spur on which the word "Halfpenny" is written.

If a straight line is drawn from the cross-roads to where the fence joins the road north of "y" in "Halfpenny," it will be seen that the line of sight crosses the 320-foot contour, exactly 500 yards away, and falls therefore 20 feet in 500 yards; and at 1000 yards the line of sight will be just where the road is at its highest after the

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dip by Kiln Barn. The line of sight will be then 300 *feet high and the road itself* 285 *feet, so the road will be invisible by* 15 *feet near the footpath.*

As regards the point on the road near the fence mentioned above, the distance from the cross-roads to this point is 1375 *yards in a straight line, and as the line of sight falls* 20 *feet in* 500 *yards—*

yds. yds. ft.
500 : 1375 :: 20 : $x = 55$ feet,

so that the time of sight will be $340 - 55$, *or* 285 *feet high, whereas the road is probably only* 282 *feet high at this point.*

The hedgerows, however, might be visible, and a considerable portion of the road along the ridge, N.E. of Kiln Barn, might be visible if the patrol stood up or climbed on a gate; as the extra 5 *feet gained would make the line of sight* $340 - 68$, *or* 272 *feet high at the fence north of "y" in Halfpenny, whereas the road itself is over* 80 *feet at this point. Thence on it falls steeply and is clearly invisible.*

THE END

Printed by BALLANTYNE, HANSON & Co.
Edinburgh & London

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A Classified Catalogue

OF WORKS IN

GENERAL LITERATURE

PUBLISHED BY

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